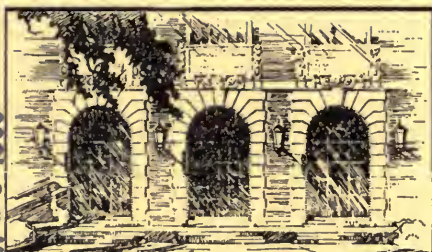


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FLORA OF GUATEMALA

APR 20 1964

PAUL C. STANDLEY

AND

LOUIS O. WILLIAMS

FIELDIANA: BOTANY

VOLUME 24, PART VII, NUMBER 4

Published by

CHICAGO NATURAL HISTORY MUSEUM

NOVEMBER 18, 1963

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FLORA OF GUATEMALA
PART VII

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PAUL C. STANDLEY

Late Curator Emeritus of the Herbarium

AND

LOUIS O. WILLIAMS

Curator, Central American Botany

FIELDIANA: BOTANY

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Flora of Guatemala

MELASTOMACEAE. Melastome Family

References: Alfred Cogniaux, Melastomaceae, in DC. Monog. Phan. 7: 1–1256. 1891; H. A. Gleason, The Melastomaceae of the Yucatan Peninsula, Carnegie Inst. Wash. Publ. 522: 325–373. 1940.

Annual or perennial herbs or shrubs, often small or medium-sized trees, rarely epiphytic or scandent; leaves simple, opposite, decussate, those of a pair sometimes very unequal and the leaves then appearing alternate, entire or dentate, usually longitudinally several-nerved, with the nerves all rising at or near the base of the blade, or often several-plinerved, i.e., the nerves, at least the inner ones, rising above the base of the leaf blade; inflorescence cymose, the flowers solitary or variously clustered, sometimes spicate, the inflorescences axillary, lateral, or terminal; flowers small or large, regular, mostly 4–6-parted; hypanthium (calyx tube) subglobose to tubular, bearing the petals, stamens, and sepals at its margin; sepals small or rarely foliaceous, open or closed in bud, rarely connate to form a calyptra that is circumscissile and deciduous at anthesis; petals usually white, pink, or purple, rarely yellow; stamens normally twice as many as the petals, often dimorphic, rarely as many as the petals or more than twice as many; anthers ovoid to subulate, inflexed in bud, usually opening by a terminal pore, rarely by 2 pores or by longitudinal slits; anther connective often enlarged at the base or prolonged below the anther cells, often bearing one or more lobes, spurs, or appendages; ovary 1, free or partly or wholly inferior, 2–10-celled, commonly with numerous ovules on axial placentae, in one tribe with few ovules on basal placentae; style 1, more or less elongate; stigma 1, punctiform to peltate, simple or rarely radiately lobate; fruit enclosed within the persistent hypanthium, capsular and loculicidally dehiscent, or rupturing irregularly, or baccate; seeds minute, ovoid to linear, frequently cochleate.

The Melastomaceae contains some 200 genera, not always very distinct, and perhaps 4,500 species. Approximately two thirds of these are in the American tropics, where they are especially abundant in southern Brazil. Additional genera in tropical North America are *Axinaea*, *Centronia*, *Chaetolepis*, *Maieta* (Cocos Island), *Loreya* and *Oreodaphne*. Many additional ones occur on Caribbean islands.

The family is one of the largest in tropical North America and is especially abundant in Guatemala and Costa Rica. The number of species decreases rapidly as one goes northward into Mexico. They occur in almost all Central American habitats except the highest.

The most useful study of this complex family is that of Alfred Cogniaux, cited above, even though it is now long out of date. Field study during the last 70 years has added much to our knowledge of the neotropical flora and to the abundant Melastomes.

Leaves 1-nerved, i.e., with only a costa and inconspicuous spreading lateral veins or secondary nerves.....*Mouriri*.

Leaves with 3 or more conspicuous longitudinal nerves extending from the base to the apex of the leaf blade.

Fruit capsular; ovary usually wholly superior; plants mostly herbs or low shrubs.

Capsule 3-winged or acutely 3-angulate, dilated at the apex.

Connective of the anther prolonged into a single spur; plants glabrous throughout.....*Monolena*.

Connective of the anther bearing 2 or 3 spurs; plant more or less pubescent.
Triolena.

Capsule terete or very obtusely angulate, acute or obtuse at the apex.

Seeds not cochleate, straight.

Calyx calyptriform, circumscissile and deciduous at anthesis.

Graffenrieda.

Calyx not calyptriform, persistent.

Plants woody throughout, sometimes epiphytic or scandent.

Plants scandent and often or usually epiphytic.....*Adelobotrys*.

Plants erect shrubs.....*Meriania*.

Plants herbaceous throughout or nearly so, sometimes woody at or near the base.

Anthers rostrate.....*Rhynchanthera*.

Anthers not rostrate.....*Centradenia*.

Seeds cochleate.

Flowers 5-parted.

Hairs of the upper surface of the leaf adnate to the epidermis for a portion of their length.....*Tibouchina*.

Hairs of the upper leaf surface not partially adnate to the epidermis.
Acisanthera.

Flowers 4-parted.

Stamens strongly unequal, the connective of the larger ones often long-produced below the anther cells.

Petals lanceolate, acute.....*Nepsera*.

Petals mostly broader, not acute.

Connective little or not at all produced below the base of the anther cells.....*Monochaetum*.

Connective conspicuously produced below the anther cells.

Sepals much shorter than the hypanthium; plants succulent.

Arthrostemma.

Sepals equaling the hypanthium or nearly so; plants not succulent.....*Heterocentron*.

Stamens equal in length or nearly so, all of about the same size, the connective very shortly or not at all produced below the base of the anther cells.

Hypanthium narrowly 4-winged, in fruit conspicuously costate and setulose-hispidulous on the costae.....*Schwackaea*.

Hypanthium not winged, not conspicuously costate in fruit.

Hairs of the upper leaf surface partially adnate to the epidermis.

Pterolepis.

Hairs of the upper leaf surface not partially adnate to the epidermis.....*Aciotis*.

Fruit baccate; ovary wholly or partly inferior; plants shrubs or trees, never herbaceous.

Each flower subtended by 2 pairs of bracts, these often united, closely subtending and more or less enclosing the hypanthium.

Anthers stout, short, oblong, obtuse, laterally compressed.....*Blakea*.

Anthers linear or subulate.....*Topobea*.

Each flower not subtended by 2 pairs of enclosing bracts.

Inflorescences lateral or axillary, solitary or clustered at the nodes.

Petals obtuse or rounded at the apex.

Anthers broadly oblong or dolabriform, more or less coherent in a ring, opening by 2 minute pores.....*Bellucia*.

Anthers linear to oblong or subulate, not coherent in a ring, opening by a single pore.

Flowers arising from defoliated nodes below the leaves..*Henriettea*.

Flowers arising from the axils of green leaves.....*Clidemia*.

Petals acute.

Inflorescences arising from defoliated nodes below the leaves.

Exterior teeth of the calyx much longer than the sepals....*Ossaea*.

Exterior teeth of the calyx not exceeding the sepals....*Henriettea*.

Inflorescences arising from the axils of leaves.

Leaves on very short petioles only 1-4 mm. long.....*Henriettea*.

Leaves on slender petioles 15-30 mm. long.....*Ossaea*.

Inflorescences terminal.

Petals acute.....*Leandra*.

Petals obtuse or retuse.

Calyx calyptriform, circumsissile and deciduous at anthesis.

Conostegia.

Calyx not calyptriform, persistent at anthesis.

Formicaria (inflated green shelters for ants) present at the base or apex of the petiole.....*Tococa*.

Formicaria none.

Exterior teeth of the calyx much surpassing the sepals; branches stellate-pubescent, glandular, and long-hirsute.....*Clidemia*.

Exterior teeth little if at all surpassing the sepals; branches not with the combination of pubescence described above.

Miconia.

ACIOTIS D. Don

Low, mostly annual, erect, simple or branched, brittle herbs, pubescent or glabrous; leaves thin, petiolate, ovate or lanceolate; inflorescence paniculate or

cymose-paniculate; flowers small or minute, sessile or subsessile, white or pinkish, 4-parted; calyx tube globose or ovoid, the teeth very short, broad, deciduous; petals ovate or lanceolate, acute or setigerous at the apex, rarely obovate; stamens 8, equal or slightly unequal; anthers all alike, orbicular or oblong, dehiscent by a single pore, the connective shortly or rather long-produced below the cells, simply articulate with the filament, not appendaged or with 2 small ventral lobes; ovary free or rarely adherent below the middle, globose or ovoid, glabrous, obtuse, 2-celled; style filiform, sigmoid or straight, the stigma punctiform; capsule thin-membranaceous, indehiscent or irregularly ruptured; seeds reniform-cochleate, foveolate, usually costate and tuberculate dorsally.

About 30 species in tropical America, often in lowland rain forests. One other species in southern Central America.

Stems conspicuously winged; hypanthium and inflorescence sparsely pubescent.

A. Levyana.

Stems not winged, often angled; hypanthium and inflorescence densely glandular-pubescent. *A. rostellata.*

Aciotis Levyana Cogn. in Mart. Fl. Bras. 14, pt. 3: 460. 1885.

Wet mixed forest, usually in boggy places or swamps, 300 meters or less; Izabal. British Honduras; Honduras; Nicaragua (type from Chontales, *Levy* 497); Costa Rica; Panama; Colombia.

A rather stout, erect annual, a meter high or usually lower, branched, the branches quadrangular, the angles with conspicuous green wings sometimes 5 mm. broad, the stems hirsute with scattered, mostly eglandular, stiff hairs; petioles stout, hirsute, somewhat marginate, 1–2 cm. long; leaf blades thin, ovate or lance-ovate, 5–10 cm. long, acuminate, rounded or cordate at the base, 7-nerved, entire or nearly so, hirsute with scattered brownish hairs 1–2 mm. long; panicles 5–10 cm. long, sparsely pilose, the hairs gland-tipped or eglandular; hypanthium 2 mm. long, pilose; petals white, gland-tipped, 2–3 mm. long; connective shortly prolonged below the anther cells.

This species has often been reported from Central America as *Aciotis paludosa* (Mart.) Triana.

Aciotis rostellata (Naud.) Triana, Trans. Linn. Soc. Bot. 28: 51. 1871. *Spennera rostellata* Naud. Ann. Sci. Nat. ser. 3, 14: 143. 1850.

Wet thickets or mixed forest, usually in swamps or bogs, 600 meters or less; Izabal. Southern Mexico; British Honduras; Honduras; Nicaragua; Costa Rica; Panama.

An erect annual, usually 60 cm. high or less, branched, the stems quadrangular, not winged, densely glandular-pilose; petioles hirsute, 1–2 cm. long; leaf blades thin, ovate or oblong-ovate, 5–10 cm. long, acute or acuminate, obtuse or rounded at the base, thinly short-hirsute on both surfaces, mostly 7-nerved; panicles sometimes 10 cm. long, few-many-flowered, densely glandular-pilose; hypanthium 2 mm. long, densely glandular-pilose; petals pinkish white, 2–3 mm. long, gland-tipped; connective shortly prolonged below the base of the anther cells.

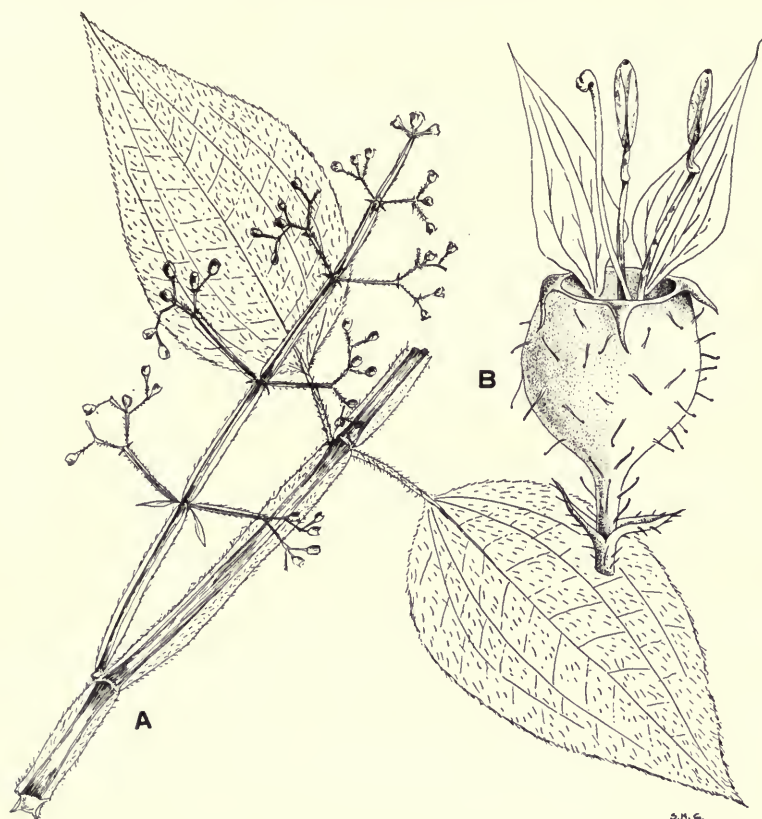


FIG. 56. *Aciotis Levyana*. A, Portion of stem and inflorescence; $\times \frac{1}{2}$. B, Detail of flower; $\times 10$.

This is probably the plant reported from Izabal as *A. laxa* Cogn.; it has been reported as *A. paludosa* as well.

ACISANTHERA P. Browne

Reference: J. J. Wurdack, *Fieldiana, Bot.* 29: 535-541. 1963.

Low, annual or perennial herbs, growing in wet soil, simple or branched, with small leaves; flowers small, 4-5-parted, usually pink, axillary or terminal, solitary or in small cymes, sessile or short-pedicellate; hypanthium campanulate or hemispheric, usually 8- or 10-costate; sepals narrowly triangular to ovate, erect or spreading; stamens dimorphic, the anthers oblong to subulate, truncate, attenuate, or rostrate at the apex; connective of the larger anthers conspicuously prolonged and bearing 2 basal anterior lobes, the connective of the smaller anthers shorter and with smaller lobes; ovary free, 2-4-celled; style slender, often bent,

attenuate to the punctiform stigma; fruit capsular; seeds small, reniform or cochleate, minutely pitted.

About 20 species, in tropical America. Two other Central American ones are known from Costa Rica and Panama.

Leaves sessile, entire or inconspicuously serrulate; stems simple or sparsely branched above.

Large and small anther thecae oblong, tapering to a narrower pore.

Plants glabrous; calyx lobes longer than the hypanthium *A. bivalvis*.

Plants glandular pubescent, at least in the inflorescence; calyx lobes usually shorter than the hypanthium *A. limnobios*.

Large (usually) and small anther thecae broadly oval and truncate, the pore equaling the anther width *A. crassipes*.

Leaves petiolate, denticulate or crenulate; stems usually freely branched.

A. quadrata.

Acisanthera bivalvis (Aubl.) Cogn. in Mart. Fl. Bras. 14, pt. 3: 216. 1885. *Melastoma bivalvis* Aubl. Pl. Guian. Fr. 404. 1775. *M. trivalvis* Aubl. l.c. 406. *A. trivalvis* Cogn. l.c. 217.

Low wet places in open pine forest, at or little above sea level; British Honduras. Northern South America.

Plants erect, simple or sparsely branched above, the stems rather stout, thickened below, 20–40 cm. high, glabrous, acutely tetragonous; leaves sessile, erect or ascending, oblong, 5–15 mm. long, acute, obtuse or rounded at the base, entire or serrulate, 3-nerved, glabrous; flowers mostly terminal, short-pedicellate; hypanthium glabrous, 2.5–3 mm. long; sepals triangular, 3.5–4 mm. long, setose at the apex; petals rose-colored, 6–10 mm. long; episepalous anthers narrowly oblong, 2.5 mm. long, the epipetalous anthers subulate, 1.8 mm. long.

Acisanthera crassipes (Naudin) Wurdack, Fieldiana, Bot. 29: 539. 1963. *Onoctonia crassipes* Naudin, Ann. Sci. Nat. ser. 3, 12: 277, t. 12, f. 4. 1849. *A. Bartlettii* Gleason, Pap. Mich. Acad. Sci. 17: 145, t. 19. 1933 (type *Bartlett* 11260 from British Honduras).

In wet or swampy savannas or pine forests. British Honduras; South America.

Stem slender, often simple, 1 to 2 dm. high, sharply 4-winged, sparsely glandular-pubescent above; leaves sessile, rounded or obtuse at the base, obscurely 3-nerved, glandular-ciliate, the lower rotund, deflexed, 2–5 mm. long, somewhat crowded, the upper widely separated, progressively narrowed to ovate or elliptic, spreading or erect; flowers short-pedicelled, terminal, hypanthium about 2 mm. long, glandular-pubescent; sepals 2.5 mm. long, acuminate, glandular-pubescent; petals white, obovate, 5 mm. long; episepalous anthers broadly truncate, the thecae about 0.5 mm. long, the connective somewhat longer, bearing a fleshy cordate appendage 0.7 mm. long; epipetalous anthers sterile, 0.2 mm. long, the 2-tuberculate connective not prolonged.

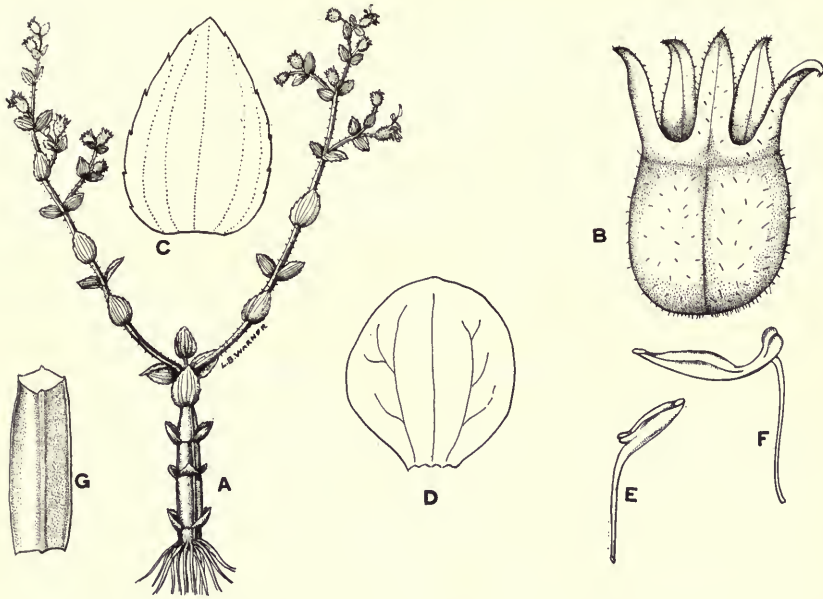


FIG. 57. *Acisanthera limnobios*. A, Habit; $\times 1$. B, Hypanthium and calyx; $\times 6$. C, Leaf; $\times 6$. D, Petal; $\times 5$. E and F, An anther of each series; much enlarged. G, Section of stem; enlarged.

Acisanthera limnobios (DC.) Triana, Trans. Linn. Soc. Bot. 28: 33, t. 11. 1871. *Microlicia limnobios* DC. Prodr. 3: 117. 1828. *A. pellucida* Wright in Griseb. Cat. Pl. Cub. 104. 1866.

Boggy meadows in pine forest area; Chiquimula. Honduras; Panama; Cuba; South America.

Plants probably annual, erect or repent; the stems mostly simple and thickened below at the base, 3–20 cm. tall, obscurely angled or winged above, glandular-pilose, often sparsely so; leaves sessile, oblong or oblong-ovate to broadly ovate, 2–8 mm. long, the lowest often crowded, rounded or subcordate at the base, obscurely 3-nerved, somewhat puberulent below and often glandular-ciliate, entire or nearly so; inflorescence a simple few-flowered raceme or single flowers from the axils of leaves or sometimes subcymose; pedicels of flowers 1–4 mm. long; hypanthium 2.5–3.5 mm. long at maturity, glandular-pubescent, the lobes 2.5–3 mm. long, narrowly lanceolate; petals white, obovate, 5–8 mm. long; style about 2.5–3 mm. long; capsule about 2.5 mm. in diameter.

Acisanthera quadrata Pers. Syn. Pl. 1: 477. 1805. *Rhexia acisanthera* L. Syst. Nat. ed. 10. 998. 1759.

Wet savannas, usually in boggy places, at or near sea level; Izabal. Southern Mexico; British Honduras; Honduras; Nicaragua; Costa Rica; Panama; West Indies; South America.

Plants probably annual, usually erect, widely branched from the base or sometimes only above the middle, erect or ascending, 60 cm. high or less, the stems acutely quadrangular and narrowly winged on the angles, setose-pilose at the nodes, elsewhere glandular-pubescent or glabrous; leaves short-petiolate, ovate to oblong-ovate, 1-2 cm. long, acute or subacute, acute or broadly cuneate at the base, finely and evenly denticulate, 3-nerved, glabrous or pubescent, often glandular-pubescent; flowers numerous, solitary in the leaf axils, the pedicels 1-4 mm. long; hypanthium broadly campanulate, 2 mm. long, usually glabrous, sometimes pubescent or glandular-pubescent, the sepals triangular, 2 mm. long; petals rose-colored, 5-6 mm. long.

Called "*sirinillo*" in British Honduras, according to Gentle.

ADELOBOTRYS De Candolle

Woody vines, creeping by aerial roots; leaves short-petiolate, oblong to ovate or rounded, entire or denticulate; flowers 5-parted, white or pink, rather conspicuous, in paniculate umbels or head-like clusters; hypanthium campanulate to obconic or almost tubular, strongly costate in fruit; calyx spreading, the lobes short or obsolete, exterior teeth sometimes present, obovate; stamens 10, isomorphic or dimorphic, the filaments complanate, adherent at the base to the petals; anthers linear or subulate, deflexed, often arcuate, the connective shortly prolonged below the cells into a short, erect, conic or bidentate basal spur, bearing dorsally a long antrorse appendage, this cleft at its apex; ovary free, 3-5-celled, the style elongate, slender, the stigma minute, capitate; fruit capsular, seeds numerous, linear-cuneate, winged at the apex, winged or caudate at the base, the embryo almost central.

Species about 20, in tropical America. Only one is recorded in North America, although a second and undescribed species may be found in British Honduras.

Adelobotrys adscendens (Swartz) Triana, Trans. Linn. Soc. Bot. 28: 67. 1871. *Melastoma adscendens* Swartz, Fl. Ind. Occ. 2: 772. 1800.

Creeping on tree trunks in wet mixed forest, often in swamps, 650 meters or less; Alta Verapaz; Izabal. Southern Mexico; British Honduras, along the Atlantic coast to Panama; Jamaica; northern South America southward to Bolivia.

A small or large, woody vine, sometimes 8 meters long, creeping along tree trunks by adventitious roots, the younger parts, inflorescence, and petioles sparsely brown-strigose, the plants appearing glabrous; leaves on petioles 1-3 cm. long, firm, slightly fleshy when fresh, broadly ovate or usually rounded-ovate or subcordate, 6-13 cm. long, abruptly acute or short-acuminate, entire or serrulate, subcordate to rounded at the base, 5 (-7) -nerved, glabrous above, slightly strigose beneath in the axils of the nerves; inflorescences terminal and lateral in the upper leaf axils, forming a corymb 15-40 cm. long, the umbels 2-5-flowered, the pedicels

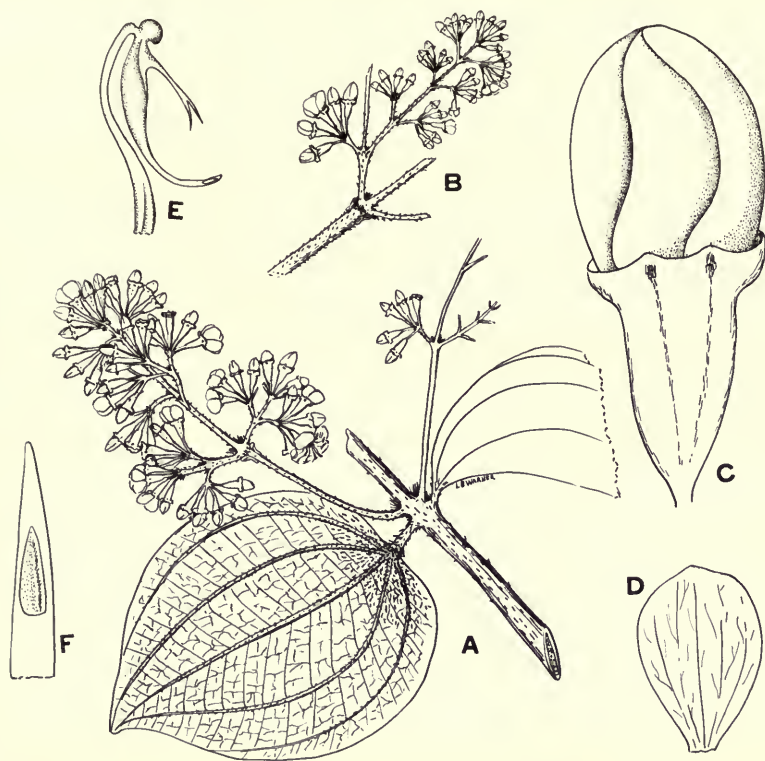


FIG. 58. *Adelobotrys adscendens*. A, Habit; $\times \frac{1}{2}$. B, Portion of inflorescence; $\times \pm \frac{1}{2}$. C, Flower; $\times 5$. D, Petal; $\times 2\frac{1}{2}$. E, Stamen; $\times 5$. F, Seed; $\times 15$.

2–5 mm. long or in fruit much longer; hypanthium obconic, 5 mm. long; petals white, obovate, about 1 cm. long; filaments 7 mm. long, the anthers 6–10 mm. long; fruit 8 mm. long, conspicuously 10-costate, constricted at the torus.

Called “tietie” in British Honduras.

ARTHROSTEMMA Ruiz & Pavón

Erect or rarely subscandent, fragile, succulent, probably annual herbs, branched; leaves slender-petiolate, mostly ovate, serrulate or almost entire; flowers rather large, 4-parted, showy, pink or purple, in lax branched terminal cymes, the petals soon caducous; hypanthium slender-obconic to narrowly campanulate, elongate, glabrous or nearly so, the sepals very short; stamens somewhat dimorphic or isomorphic, if dimorphic the episepalous anthers linear or oblong, straight or curved, the connective prolonged below the cells and bearing an anterior appendage, the epipetalous anthers shorter, the connective shorter or not prolonged, bearing a relatively short appendage; ovary free or nearly so,

4-celled, the style elongate, somewhat bent, the stigma punctiform; fruit capsular, enclosed in the accrescent hypanthium; seeds numerous, semi-ovoid, with about 8 rows of tubercles.

About 6 species, in tropical America. All the North American ones are listed here.

Flowers and capsule sessile.

Hypanthium in fruit about 1 cm. long; stems winged *A. alatum*.

Hypanthium in fruit 1.5 cm. long or longer; stems not winged *A. parvifolium*.

Flowers and capsules on long pedicels.

Stems with narrow but conspicuous, green wings *A. alatum*.

Stems not winged *A. ciliatum*.

Arthrostemma alatum Triana, Trans. Linn. Soc. Bot. 28: 35. 1871.

Wet thickets, 900 meters; Santa Rosa (near Cuilapa, *Standley* 78295). Mexico; El Salvador; Costa Rica; Panama; Venezuela.

An erect or decumbent annual, 70 cm. high or less, usually much branched, the stems conspicuously 4-winged, glabrous or nearly so; leaves long-petiolate, ovate, 3.5–7 cm. long, acute or acuminate, rounded and abruptly short-decurrent at the base, remotely ciliate-serrulate, 7-nerved, very sparsely villous or glabrous, slightly paler beneath; cymes terminal, several times dichotomous, very sparsely pilose with long gland-tipped hairs, the flowers sessile or nearly so; hypanthium subcylindric, at anthesis 4–5 mm. long, in fruit 1 cm. long, the calyx teeth minute; petals 4 mm. long, white; capsule obovoid, 5 mm. long, rounded at the base.

Arthrostemma ciliatum Ruiz & Pavón, Fl. Peruv. 4: *t.* 326. 1802; L. Wms. Fieldiana, Bot. 29: 550. 1963. *A. fragile* Lindl. Journ. Hort. Soc. 3: 74. 1847. *Heteronoma campanulare* Naud. Ann. Sci. Nat. ser. 3, 14: 153. 1850. *A. campanulare* Triana, Trans. Linn. Soc. Bot. 28: 35. 1871, *non* DC. *A. macrodesma* Gleason ex Williams, Fl. Trinidad 356, 357. 1934. *Nitro*; *nitro dulce*; *caña de Cristo*; *chamajij* (Alta Verapaz and elsewhere); *tzelectzá* (Cobán, Quecchi).

Moist thickets or mixed forest, often in pine forest, common in second growth thickets, at 1,500 meters or usually much less; Alta Verapaz; Izabal; Jutiapa; Santa Rosa; Escuintla; Suchitepéquez; Retalhuleu; Sololá; Quezaltenango; San Marcos; Huehuetenango; Zacapa. Mexico; British Honduras to Panama; Jamaica; South America south to Bolivia.

A much branched herb with very brittle stems, these erect and less than a meter high or occasionally scandent and frequently 2–3 meters long or longer, the branches succulent, quadrangular, pilose or glandular-pilose at least on the younger parts; leaves on petioles 1–2 cm. long, somewhat succulent, ovate or lance-ovate, 3–8 cm. long, acuminate or long-acuminate, truncate to subcordate

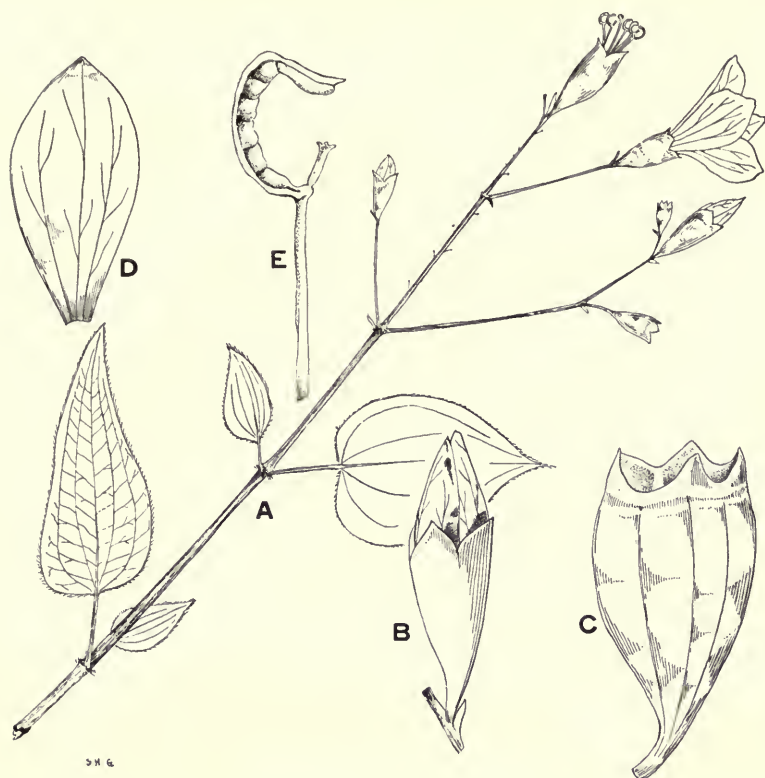


FIG. 59. *Arthrostemma ciliatum*. A, Habit; $\times 1$. B, Bud; $\times 2$. C, Hypanthium and calyx; $\times 2$. D, Petal; $\times 3$. E, Stamen; $\times 5$.

at the base, 5-nerved, glabrous or usually sparsely villose-setose above, glabrous beneath, paler beneath, finely serrulate, opposite leaves often unequal in size; inflorescence lax and few-flowered, the pedicels 5–10 mm. long; hypanthium narrowly obconic, about 8 mm. long or in fruit to 1.5 cm. or even more; petals to 2.5 cm. long, deep rose-pink, bright red outside in bud; episepalous anthers about 4–5 mm. long, the connective short or long, the stamens isomorphic or variously dimorphic.

This species has usually gone under one or another of the synonymous names given above. It is plentiful in many places in Guatemala and is often weedy in character. The large flowers are rather attractive but the petals fall away when the plant is shaken and rarely are mature flowers preserved on herbarium specimens due to their ephemeral nature.

In El Salvador the plant is called "*jásmín montés*" and in Vera Cruz "*caña agria*." In Guatemala it is well known by the name

"nitro." The foliage has a decidedly acid flavor and for this reason men working in cultivated fields or along the roads often chew it and say that they feel much refreshed. This use of the plant is apparently not known elsewhere.

Arthrostemma parvifolium Cogn. in DC. Monog. Phan. 7: 143. 1891. *A. apodocarpum* Donn.-Sm. Bot. Gaz. 37: 210. 1904 (type from Cubilgüitz, Alta Verapaz, *Tuerckheim* 8208).

Moist or wet, usually rocky thickets, or on jagged limestone rocks or cliffs, 1,500 meters or less; Petén; Alta Verapaz; Izabal (type from Finca Chocón, *S. Watson*). Mexico; British Honduras.

Plants stout, erect or decumbent, 60 cm. high or less, usually much branched, the stems obtusely angulate, very sparsely glandular-pilose; leaves on petioles 1-3.5 cm. long, mostly elliptic-ovate, 2-8 cm. long, short-acuminate to obtuse, acute or cuneate at the base, 3-5-nerved, glabrous or very sparsely setose-pilose, paler and often purplish beneath; inflorescence sparsely branched, the flowers few, sessile; hypanthium at anthesis 8 mm. long, glabrous; petals purplish pink, 1.5 cm. long; filaments glandular-pilose; anthers oblong or oval.

This is a very common plant about Cobán and in other parts of Alta Verapaz. While it often grows in weedy fields, its favorite habitat seems to be the jagged limestone rocks or cliffs that are almost free of woody vegetation.

BELLUCIA Rafinesque

Coarse shrubs or trees, glabrous or minutely pubescent, the branches stout, terete or compressed; leaves large, petiolate, coriaceous, entire, 5-nerved or 3-5-plinerved, usually blackening when dried; flowers large, 5-8-parted, white or rose, solitary or in small, few-flowered, lateral or axillary panicles; hypanthium hemispheric, thick-walled; calyx large, at anthesis divided into 2-6 equal or unequal segments; petals large, coriaceous, obovate or oblong, obscurely unguiculate; stamens isomorphic, more or less coherent in a ring, the filaments short and stout; anthers short, broadly oblong or dolabriform, laterally compressed, opening by 2 minute pores, the connective neither produced nor appendaged; ovary wholly inferior, 5-15-celled, the style stout, terete, the stigma large, capitate; fruit baccate, many-seeded.

A small genus of perhaps 8 or 10 species in tropical America. The two species recognized below may prove to be only one. No others are known from North America. For discussion see Williams, *Fieldiana*, Bot. 29: 551. 1963.

Inflorescence usually 1-flowered and borne in the axil of existing leaves; calyx rupturing unequally and often soon deciduous. *B. grossularioides*.

Inflorescence usually more than 1-flowered and these usually borne on old wood; calyx usually equally 5-lobed and persistent. *B. costaricensis*.

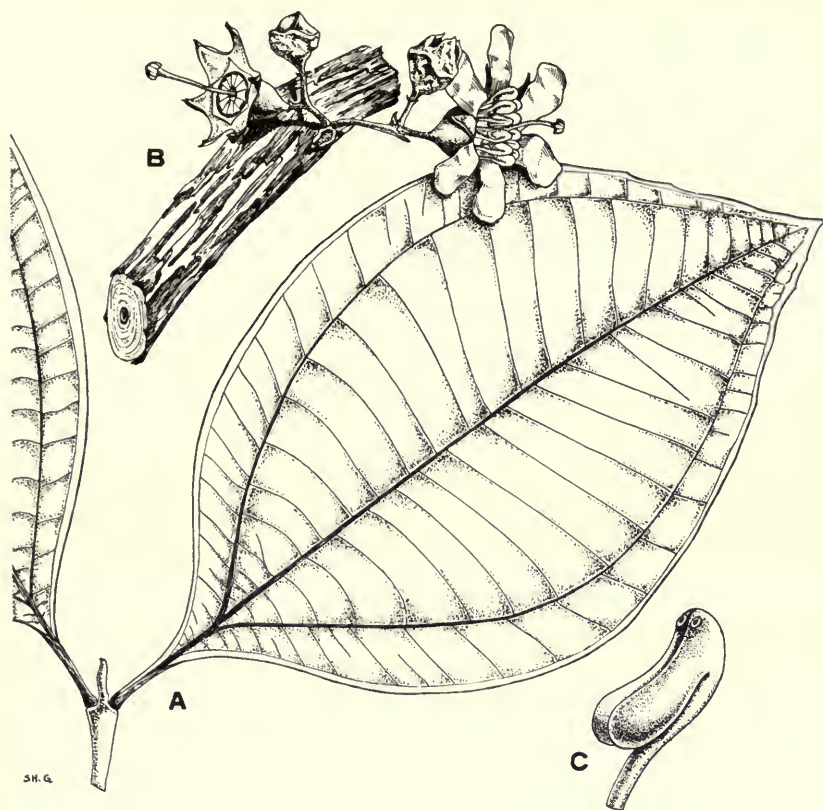


FIG. 60. *Bellucia costaricensis*. A, Leaves; $\times \pm \frac{1}{2}$. B, Inflorescence on old wood; $\times \pm \frac{1}{2}$. C, Anther; much enlarged.

Bellucia costaricensis Cogn. Bull. Soc. Bot. Belg. 30, pt. 1: 264. 1891. *Manzana de montaña*.

Wet mixed forest, sometimes in open pine forest, or in pastures, 300 meters or less; Izabal. Mexico to Panama. Colombia.

A tree of 6–8 meters, the crown rounded, the branchlets tetragonous, brownish-puberulent or glabrate; leaves coriaceous, on stout petioles 2–3 cm. long, ovate-elliptic or broadly elliptic, mostly 20–30 cm. long and 12–18 cm. broad, rounded or obtuse at the apex and abruptly short-acute, broadly cuneate at the base, 5-plinerved or 5-nerved, deep green above, glabrous or brownish-puberulent, paler beneath, in age glabrate; flowers mostly in fascicles of 2–4, on stout pedicels 1.5 cm. long, 5–6-parted; calyx 2–2.5 cm. broad, the lobes broadly triangular, acute, slightly shorter than the hypanthium; petals 13–15 mm. long, white or pinkish white, incurved-erect; anthers dull yellow.

The large juicy fruits of this and other species are edible. Called “Maya” in British Honduras.

Bellucia grossularioides (L.) Triana, Trans. Linn. Soc. Bot. 28: 141. 1871. *Melastoma grossularioides* L. Sp. Pl. 390. 1753.

Wet mixed forest, 400 meters or less; Izabal; Alta Verapaz. Mexico; British Honduras; Panama; northern South America to Ecuador.

A tree of 5-10 meters with a rounded crown, the younger branches tetragonus, glabrous; leaves on stout petioles 2-4 cm. long, coriaceous, ovate to elliptic or oblong-obovate, 20-30 cm. long, 10-20 cm. broad, acute or often rounded and abruptly acute, rounded to cuneate at the base, 5-plinerved or almost 5-nerved, glabrous or obscurely puberulent; flowers mostly solitary, rarely 2, on stout pedicels 2 cm. long; calyx 1.5-2 cm. broad; calyx lobes 2-5, irregular in shape, acute to rounded, 5-8 mm. long; petals 1.5-2 cm. long, white.

Called "black moir" and "Maya" in British Honduras. The flowers are said to be fragrant. Here probably belongs material that has been reported from Alta Verapaz as *B. superba* Naudin.

BLAKEA P. Browne

Shrubs or trees, sometimes epiphytic, glabrous or variously pubescent, the branchlets usually terete; leaves often large, petiolate, coriaceous, ovate or oblong, entire or nearly so, 3-5-nerved, with very numerous and close, transverse, parallel veins; flowers often large and showy, 6-parted, white, pink, or purple, axillary, solitary or fasciculate, pedicellate, involucre by usually 4, generally free bracts, these opposite by pairs; hypanthium broadly campanulate or hemispheric, the calyx truncate or with 6 short lobes; petals conspicuous, usually obovate; stamens isomorphic, the filaments short, stout; anthers short, stout, laterally compressed, mostly declinate or horizontal, the connective little or not at all prolonged, bearing a stout, dorsal, basal, spreading or retrorse, obtuse, or acute spur; ovary inferior, generally 6-celled, the style punctiform or capitate; fruit baccate.

Species perhaps 50 or more in the mountains of tropical America. No fewer than 21 have been described from North America, mostly from Costa Rica and Panama. Often pollinated by hummingbirds.

Leaves triplinerved, acute at the base.

Petals 1.5 cm. long.....*B. cuneata*.

Petals 2.5-3 cm. long.....*B. bella*.

Leaves 5-nerved, rounded at the base.

Leaves of a pair equal or nearly so; bracts little if at all exceeding the calyx.

B. Purpusii.

Leaves of a pair very unequal, one of them greatly reduced; bracts conspicuously longer than the calyx.....*B. guatemalensis*.

Blakea bella Standl. Field Mus. Bot. 22: 94. 1940.

Moist or wet, mixed forest, 1,300 meters or less; Izabal (type from bank of Río Dulce, *C. L. Wilson* 402; collected also at several other localities). Honduras.

A tree, commonly 6–15 meters high, the branchlets terete, minutely and sparsely or rather densely stellate-furfuraceous, glabrate in age; leaves thick-membranaceous, on petioles 1.5–3 cm. long, 3-plinerved, elliptic-oblong or narrowly elliptic, 10–24 cm. long, 4–8 cm. broad, long-acuminate or rather abruptly cuspidate-acuminate, acute or subobtuse at the base, glabrous above, densely and minutely pale-punctate, almost concolorous beneath, when young sparsely and minutely stellate-furfuraceous, in age almost wholly glabrous, the leaves of a pair equal or nearly so; flowers axillary, solitary, on stout pedicels 6–8 mm. long; outer bracts connate below, sparsely and minutely stellate-furfuraceous outside or almost glabrous, 1.5–2 cm. broad, almost 2.5 cm. long, the free portion ovate-rounded, short-acuminate, the inner bracts wholly united; calyx and hypanthium about 16 mm. long and 22 mm. broad near the apex, the lobes very short, broader than long, apiculate, minutely stellate-furfuraceous outside; petals rose-colored, 3 cm. long, very broad, truncate or broadly rounded at the apex; anthers broadly oblong, 5–6 mm. long, the filaments stout, equal in length.

The flowers are very fragrant.

Blakea cuneata Standl. Carnegie Inst. Wash. Publ. 461: 76. 1935.

Wet mixed forest, 300–800 meters; Petén (type from Camp 32, British Honduras boundary, *W. A. Schipp* S-604). British Honduras (Río Viejo); Honduras.

An epiphytic shrub or tree 2.5–7 meters long, in part creeping by aerial roots, the stems 5–10 cm. in diameter, the branchlets subterete, glabrate, when young furfuraceous-puberulent; leaves on stout petioles 1–2 cm. long, subcoriaceous, narrowly elliptic-oblong, 8–13 cm. long, 3–5.5 cm. broad, abruptly acuminate, acute at the base, 3-plinerved, glabrous above, minutely whitish-puncticulate, sparsely furfuraceous-puberulent beneath along the nerves or almost wholly glabrous, the leaves of a pair equal or nearly so; pedicels 1 cm. long; bracts very unequal, the outer ones foliaceous, 2.5 cm. long, ovate, obtuse-acuminate, connate above the base, glabrous or glabrate, the free portion obliquely spreading; inner bracts 14 mm. long, broadly ovate, subobtuse; calyx and hypanthium broadly campanulate, 14 mm. long, sparsely furfuraceous-puberulent outside on the lobes, the lobes 6, semiorbicular, 4–5 mm. long, apiculate; petals rose-colored, glabrous, 1.5 cm. long, suborbicular; anthers oblong, obtuse, 5–6 mm. long; filaments glabrous; style stout, glabrous, 1.5 cm. long.

Blakea guatemalensis Donn.-Sm. Bot. Gaz. 14: 25, *t.* 6. 1889.

Moist or wet, mixed forest, sometimes, at least, on limestone, frequently on stream banks, 700–2,000 meters; endemic; Alta Verapaz (type from Pansamalá, *Tuerckheim* 778); Huehuetenango.

An erect shrub or tree as much as 9 meters high, sometimes epiphytic and scandent or creeping, the young branches densely covered with a brown stellate-furfuraceous tomentum; leaves short-petiolate, those of a pair very unequal, one of the pair much reduced and often only 1–2 cm. long; leaf blades 5-nerved, oval



FIG. 61. *Blakea guatemalensis*. A, Habit; $\times \pm \frac{1}{2}$. B, Vertical section of flower; $\times \pm \frac{1}{2}$. C, Calyx and hypanthium; $\times \pm \frac{1}{2}$. D, Stamen (after Faxon in Donnell Smith); enlarged. E, Floral diagram.

or ovate, mostly 11–14 cm. long and 5–9 cm. broad, abruptly caudate-acuminate, broadly rounded at the base, often obscurely cordate or very narrowly subpeltate; pedicels rather slender, solitary or geminate, densely and coarsely stellate-furfuraceous, 3–5 cm. long; outer bracts ovate-lanceolate, obliquely spreading, mostly 1.5–2 cm. long; inner bracts rounded-obovate, half as long as the outer ones; calyx and hypanthium about 12 mm. long, the calyx shallowly sinuate-lobate; petals obovate-spatulate, 2.5 cm. long or somewhat shorter, rose-colored; style 16 mm. long; berry costate when dry, 6-celled.

Blakea Purpusii Brandege, Univ. Calif. Publ. Bot. 6: 58. 1914.

Moist or wet, mixed, mountain forest, usually in ravines on steep slopes, 1,300–2,700 meters; Quezaltenango; San Marcos. Mexico (type from Cerro del Boquerón, Chiapas).

A tree of 6–18 meters with a short thick trunk and a dense, widely spreading or rounded crown, the branchlets stout, densely covered with a coarse brown stellate-furfuraceous tomentum; leaves on stout petioles 2–6 cm. long, those of a pair equal or nearly so, chartaceous, broadly elliptic to broadly obovate or ovate-elliptic,

mostly 10–23 cm. long and 6–13 cm. broad, acute or almost rounded and abruptly short-acuminate, rounded or very obtuse at the base, entire or nearly so, glabrous above, coarsely stellate-furfuraceous beneath with brown or ferruginous hairs or in age glabrous or nearly so, 5-nerved; pedicels solitary or geminate, 1.5–2.5 cm. long; bracts free or nearly so, subequal, the outer ones obovate, very obtuse, mostly 12–15 mm. long, densely stellate-furfuraceous; calyx and hypanthium in fruit scarcely more than 1 cm. long, broadly campanulate, the limb with 6 very short and broad lobes; petals 6, olive-green, inconspicuous; style 1.5 cm. long.

A common tree in the barrancos of western Guatemala, of rather handsome appearance on account of the neat foliage; the flowers are neither showy nor handsome.

CENTRADENIA G. Don

Low, annual or perennial herbs, alternately branched, usually erect, the stems tetragonous or narrowly 4-winged; leaves short-petiolate, obliquely lanceolate, those of a pair often very unequal, the smaller one often minute and early deciduous; flowers small, 4-parted, pink or white, in corymbiform cymes; hypanthium campanulate, subtetragonous, glabrous or pubescent; sepals 4, shorter than the hypanthium; petals obovate or suborbicular; stamens 8, dimorphic and dissimilar or nearly isomorphic, the filaments glabrous; anthers oblong or ovoid, obtuse, erostrate, opening by a single minute pore, the cells undulate; connective produced below the anther cells, arcuate, terminated by a compressed, clavate, bilobate or bisetose appendage; ovary free above, 4-celled, glabrous and sometimes dentate at the apex; style filiform, declinate, the stigma punctiform; fruit capsular, equaling the hypanthium, many-seeded, 4-valvate; seeds minute, ovoid, the hilum apical.

About 5 species, in Mexico, Central America, Panama and northern South America. Among local members of the Melastomaceae, the species of this genus may be recognized by their narrow, conspicuously asymmetric leaves, much paler on the lower surface. The leaves of a pair are usually very unequal in size, the smaller ones of the pairs being so reduced, or early deciduous, that at first glance the leaves seem to be alternate.

Hypanthium 4–10 mm. long.

Calyx lobes about twice broader than long; inflorescence glabrous.

C. grandifolia.

Calyx lobes as long as broad or longer; inflorescence pubescent. . . . *C. salicifolia.*

Hypanthium less than 4 mm. long.

Hypanthium and pedicels with glandular pubescence.

Stamens essentially isomorphic, appendages lacking 2 setose processes.

C. floribunda.

Stamens dimorphic, appendages on 4 stamens with 2 long setose processes.

C. floribunda var. *Bernoullii.*

Hypanthium and pedicels glabrous to strigose but not glandular-pubescent.

C. inaequilateralis.

Centradenia floribunda Planch. Fl. Serres 5: t. 453. 1849; L. Wms. Fieldiana, Bot. 29: 552. 1963 (type grown from Guatemalan seed). *C. floribunda* var. *grandifolia* Cogn. in Donn.-Sm. Bot. Gaz. 20: 286. 1895. *Nitro*; *nitro amargo*; *nitro de peñasco*.

Wet banks, thickets or forests, often along streams, 300–1,500 meters; Quiché; Quezaltenango; Retalhuleu; Suchitepéquez; Chimaltenango; Sacatepéquez; Guatemala; Escuintla; Jalapa; Chiquimula; Santa Rosa. Endemic.

Plants probably perennial, erect or decumbent, the stems sometimes prostrate and rooting at the base, mostly 20–50 cm. high, subterete or somewhat tetraginous, slender, laxly and sparsely branched, glandular-puberulent, usually densely so, at least when young; leaves short-petiolate, lanceolate or narrowly lanceolate, mostly 4–7 cm. long and 1–1.5 cm. broad, long-attenuate to each end, entire, sparsely or densely puberulent or setulose-pilosulous on both surfaces, pale beneath; cymes few-many-flowered, equaling or shorter than the leaves, glandular-pubescent; pedicels capillary, recurved in age, 4–7 mm. long; calyx and hypanthium campanulate, 2.5–3 mm. long or in fruit about 4 mm., densely glandular-pubescent; petals obovate, pink, 5 mm. long, rounded at the apex; flowers usually ebracteate; connective of the larger filaments truncate at the base.

The plant has been introduced into cultivation in Europe and the United States. Colored illustrations of it indicate that when grown in pots it is much handsomer than in the wild state, where it is an inconspicuous and rather weedy plant.

Centradenia floribunda var. **Bernoullii** (Cario) L. Wms. Fieldiana, Bot. 29: 552. 1963. *C. Bernoullii* Cario ex Cogn. in DC. Monog. Phan. 7: 118. 1891.

Moist shaded banks or thickets, 400–1,400 meters. El Salvador; Honduras.

Similar to the species in all detail except the anthers dimorphic, in two series of 4 each; appendages of the larger anthers with two long setose processes.

The variety may be expected in Guatemala and has often been reported there but specimens seen belong rather to the typical variety.—Called “*cush-cush*” in El Salvador.

Centradenia grandifolia (Schlecht.) Endl. in Walp. Ann. 2: 119. 1843; L. Wms. Fieldiana, Bot. 29: 553. 1963. *Rhexia grandifolia* Schlecht. Linnaea 13: 429. 1839. *C. grandifolia* var. *brevisepala* Gleason, Phytologia 1: 340. 1939 (type from Guatemala, Stuart 15).

In moist forest, 1,100–1,500 meters; Alta Verapaz. Mexico.

Perennial, occasionally suffrutescent plants to 2 meters tall. Stems 4-angled or narrowly winged, sparsely branched, glabrous or sparsely hirsute on the angles;

leaves with one of each pair minute and soon deciduous, the other large, short petiolate or nearly sessile, lanceolate to ovate-lanceolate, oblique, acuminate, somewhat cuneate to the base, sparsely hirsute pubescent above to glabrous, glabrous below, 6–20 cm. long and 2.5–6 cm. broad; inflorescences axillary or terminal few-flowered cymes, usually much shorter than the subtending leaf, glabrous or nearly so; hypanthium campanulate, cuneate to the base, glabrous, 4–7 mm. long; calyx 4-lobed, the lobes very short and broad, rounded, ciliate, 0.5–1 mm. long and 2–4 mm. broad, somewhat accrescent in fruit; petals obovate, ciliate, about 8–10 mm. long and 6–7 mm. broad; anthers 8, dimorphic, the large ones with an appendage below the connective about 2 mm. long, appendage on smaller anthers much shorter.

Centradenia inaequilateralis (Schlecht. & Cham.) G. Don, Gen. Hist. Dichl. Pl. 2: 765. 1832. *Rhexia inaequilateralis* Schlecht. & Cham. Linnaea 5: 567. 1830.

Wet forests and along streams, 600–800 meters; Alta Verapaz; Baja Verapaz. Mexico; Honduras; Nicaragua; Costa Rica; Panama.

A slender erect perennial about 30 cm. high, laxly branched, the branches tetragonous, hirtellous, eglandular; leaves narrowly lanceolate, mostly 2–4 cm. long and 3–7 mm. broad, attenuate to each end, entire, short-petiolate, thinly setulose-pilose, more densely so on the upper surface, paler beneath; flowers few at the ends of the branches, solitary or in few-flowered cymes, much shorter than the leaves, the pedicels hirtellous with eglandular hairs; calyx and hypanthium narrowly campanulate, about 3 mm. long, in fruit slightly larger, sparsely hispidulous with eglandular hairs; petals pale pink, obovate, obtuse, 5–6 mm. long; connective of the larger stamens truncate or subemarginate at the base.

The species, as known at present, has a rather unusual distribution. It is known from a few scattered localities in Mexico and northern Central America. It is abundant in Costa Rica and has been reported from a few localities in Panama.

Centradenia salicifolia Brandegee, Univ. Cal. Publ. Bot. 4: 379. 1913; L. Wms. Fieldiana, Bot. 29: 553. 1963. *C. chiapensis* Brandegee, l.c. 6: 501. 1919.

Moist or wet shaded banks and wooded ravines, often on white sand banks, 1,200–2,500 meters. San Marcos; Quezaltenango; Suchitupéquez. Southern Mexico; Costa Rica.

A slender erect herb, a meter high or usually half as tall, laxly and sparsely branched, the stems glabrous or nearly so, subterete, often tinged with red; leaves short-petiolate, slightly fleshy when fresh, obliquely lanceolate, mostly 8–16 cm. long and 2.5–4.5 cm. broad, acuminate or long-acuminate, acute at the base, entire, thinly setulose-pilose above, paler beneath, setulose-pilosulous mostly along the nerves; cymes corymbiform, often large and many-flowered, shorter than the leaves, sparsely glandular-setulose, the flowers bracteate but the bracts early de-



FIG. 62. *Centradenia salicifolia*. A, Habit; $\times 1$. B, Hypanthium and calyx; $\times \pm 4$. C, Petal; $\times \pm 4$. D and E, Two forms of stamens; much enlarged.

ciduous, conspicuously ciliate; calyx and hypanthium glabrous or practically so, in anthesis 6 mm. long, in fruit about 8 mm. long, often dark red, conspicuously reticulate-veined; petals deep rose, 8 mm. long; connective of the larger stamens produced into a short compressed appendage; ovary dentate at the apex and stipitate-glandular.

This is a common plant in the mountains of western Guatemala, especially in the white-sand regions, where it often grows in great abundance on the steeper banks. In general appearance all the species of this genus are much alike. They are rather pretty when in flower, but the petals fall when the plants are disturbed. The leaves are inclined to become limp unless there is a constant and abundant supply of water.—The disjunct range is of interest; the plant is found nowhere in the highlands of Central America between western Guatemala and the highlands of Costa Rica.

CLIDEMIA D. Don

References: Alfred Cogniaux in DC. Monog. Phan. 7: 984-1026. 1891. H. A. Gleason, The genus *Clidemia* in Mexico and Central America, Brittonia 3: 97-140. 1939.

Shrubs or small trees, usually pubescent, often hirsute or setose; leaves generally large, petiolate or rarely sessile, mostly ovate or oblong, 3-7-nerved or plinerved, entire or denticulate, those of a pair sometimes unequal; flowers small, commonly 4-8-parted, variously arranged, white, pink, or red, usually minutely bracteolate; hypanthium cupular to tubular; calyx tube none or very short, the sepals erect or spreading, mostly ovate to triangular or oblong, sometimes obsolete; outer calyx teeth conic to filiform, often much longer than the sepals and concealing them; petals ovate to obovate, small, obtuse or retuse; stamens isomorphic, the anthers subulate to linear, semiovoid, or rarely obovoid, rarely 3-6 times as many as the petals; connective simple or shortly prolonged below the anther cells, rarely produced into a short lobe below the filament; ovary partly or wholly inferior, 4-7-celled, often glandular or setose at the apex; style slender, the stigma punctiform or capitate; fruit baccate, globose, many-seeded, usually blue or dark purple; seeds ovoid or semiovoid, smooth or granular.

A large genus, with about 160 species, widely dispersed in tropical America. About 40 species are known from Mexico, Central America and Panama. There are included here Central American plants formerly referred to the genus *Heterotrichium*, a genus apparently restricted to the West Indies.

Plants with conspicuous formicaria (inflated green organs, shelters for ants) at the base or apex of the petiole.

Formicaria inserted on the branch at the base of the petiole. *C. tococoides*.

Formicaria inserted at the apex of the petiole. *C. setosa*.

Plants without formicaria.

Flowers sessile and densely clustered in the leaf axils. *C. rubra*.

Flowers variously arranged but not sessile in the leaf axils.

Leaves pubescent beneath with stellate or branched hairs, sometimes also with simple hairs.

Leaves very minutely stellate-puberulent beneath, principally on the nerves, appearing glabrous or nearly so to the naked eye. *C. cymifera*.

Leaves densely and conspicuously tomentose or often hirsute beneath.

Flowers 4-parted. *C. glandulifera*.

Flowers 5-6-parted.

Leaves mostly 7-nerved and cordate at the base.

Branchlets, inflorescences, pedicels and petioles with spreading strigose hairs 6-8 mm. long. *C. octona*.

Branchlets without long, harsh strigose hairs. *C. strigillosa*.

Leaves 5-nerved, obtuse or rounded at the base.

Leaves stellate-tomentose beneath. *C. capitellata* var. *neglecta*.

Leaves stellate-pilose and also setose with simple hairs on the lower surface.

- Inflorescence internodes 1 cm. long or less, densely long-hirsute and inconspicuously glandular. . . *C. capitellata* var. *dependens*.
- Inflorescence slender, the lateral flower clusters separated by internodes 1–2 cm. long, sparsely hirsute and conspicuously glandular. *C. capitellata*.
- Leaves pubescent beneath with simple hairs only, or sometimes glabrous.
- Leaves glabrous. *C. diffusa*.
- Leaves abundantly pubescent.
- Leaves 5–7-plinerved.
- Leaves 7-plinerved; inflorescences more than twice as long as the petioles, open and many-flowered. *C. Tuerckheimii*.
- Leaves 5-plinerved; inflorescences little longer than the petioles, sometimes shorter.
- Branches glandular-hirsute. *C. involucrata*.
- Branches hirsute with eglandular hairs. *C. dentata*.
- Leaves 3–9-nerved.
- Stamens 4–5 times as many as the petals; leaves 7–9-nerved. *C. Matudae*.
- Stamens fewer than 3 times as many as the petals; leaves 3–7-nerved.
- Leaves strongly dimorphic, those of a pair very unequal; plants epiphytic, creeping, vine-like. *C. trichocalyx*.
- Leaves not conspicuously dimorphic, all equal or nearly so; plants terrestrial, not vine-like.
- Flowers 4-parted. *C. Donnell-Smithii*.
- Flowers 5-parted.
- Hairs of the branches ascending or appressed. . . . *C. petiolaris*.
- Hairs of the branches widely spreading.
- Hypanthium pubescent with short hairs, these slightly thickened below and usually finely puberulent or roughened. *C. laxiflora*.
- Hypanthium hirsute with very long and slender, smooth and glabrous hairs.
- Torus of hypanthium bearing a conspicuous ring of fimbriate scales; leaf blades broadly rounded and usually somewhat cordate at the base. *C. hirta*.
- Torus of hypanthium without evident scales; leaf blades mostly obtuse at the base, sometimes almost rounded, not at all cordate.
- Bracts of the inflorescence minute; hairs of the stem mostly 3 mm. long or shorter. *C. petiolaris*.
- Bracts of the inflorescence conspicuous, sometimes 1 cm. long; hairs of the stem as much as 11 mm. long. *C. fulva*.

Clidemia capitellata (Bonpl.) D. Don, Mem. Wern. Soc. 4: 310. 1823. *Melastoma capitellata* Bonpl. in Humb. & Bonpl. Monog. Mélast. 5, t. 3. 1816.

Moist or wet thickets or mixed forest, sometimes in lowland pine forest or at the margins of savannas, often in second growth, 330 meters or less; Alta Verapaz; Izabal; Quiché. Southern Mexico; British Honduras; Panama; Colombia.

A shrub of 1.5–3 meters, the young branches densely hirsute, the hairs yellowish, mostly flexuous, partly gland-tipped, 3 mm. long or less, averaging about 1 mm. long; leaves on stout petioles 1–2 cm. long, ovate or lance-ovate, as much as 18 cm. long and 9 cm. broad, narrowly acuminate, rounded at the base, 5-nerved, denticulate and ciliate, densely short-hirsute, the yellowish hairs 1–1.5 mm. long; inflorescences spike-like, interrupted, often recurved, 10–15 cm. long, the flowers sessile in dense remote clusters; hypanthium 3.5–4 mm. long, densely long-hirsute and sparsely stellate-pubescent, the glandular hairs few or none; sepals 2 mm. long, the exterior calyx teeth subulate or conic, 2.5–3 mm. long; petals obovate-oblong, 4–5 mm. long, white; anthers stout-subulate, 2.5–3 mm. long; ovary setose at the apex around the style.

This has been reported from Guatemala as *C. capitata* Benth., a South American species. It is easily recognized by the long spike-like inflorescence.

Clidemia capitellata* var. *dependens ([Pavón] D. Don) Macbr. Field Mus. Bot. 13 (4¹): 484. 1941. *Clidemia dependens* [Pavón] D. Don, Mem. Wern. Soc. 4: 310. 1823. *Melastoma dependens* Pavón ex D. Don, l.c.

Wet mixed forest or thickets, sometimes in savannas, at or little above sea level; Petén; Alta Verapaz; Izabal. Southern Mexico; British Honduras to Panama; tropical South America.

A rather stout shrub 1.5–3 meters high, the branches densely hirsute with yellowish, usually flexuous hairs as much as 6 mm. long, also stellate-pubescent; leaves on stout petioles 5–15 mm. long, oblong-ovate or broadly ovate, as much as 20 cm. long and 10 cm. broad, usually not more than half as large, rather thick, acute or acuminate, rounded or rarely subcordate at the base, 5-nerved, inconspicuously denticulate, long-ciliate, densely hirsute above, densely hirsute and also stellate-pubescent beneath; inflorescences dense, spike-like, mostly 3–5 cm. long, rarely longer, the branches densely hirsute and sparsely glandular-hirsute; hypanthium campanulate, 3 mm. long, stellate-tomentose and hirsute with very long, spreading hairs; sepals depressed-ovate, 1.6–2 mm. long, the outer teeth 3–4 mm. long; petals white, oblong-ovate, 6 mm. long; anthers stout-subulate, 2 mm. long; ovary setose about the base of the style, this 5–7 mm. long.

This variety has been reported from Guatemala as *Clidemia capitata* Benth.—The variety is difficult to distinguish from the typical variety and probably cannot be with some specimens.

Clidemia capitellata* var. *neglecta (D. Don) L. Wms. Fieldiana, Bot. 29: 556. 1963. *Clidemia neglecta* D. Don, Mem. Wern. Soc. 4: 307. 1823.



FIG. 63. *Clidemia capitellata* var. *dependens*. A, Habit; $\times \frac{1}{2}$. B, Hairs from leaf surface; much enlarged. C, Hypanthium and calyx; $\times 4$.

Moist or wet forests and thickets, 1,500 meters or less; Alta Verapaz; Chiquimula. British Honduras to Panama; Cuba; south to southern Brazil.

A shrub of 1-2.5 meters, the branches, petioles, and hypanthium densely glandular-pubescent, stellate-tomentose, and setose-hirsute; leaves on petioles 1.5 cm. long or less, oblong-ovate, 7-15 cm. long, acuminate, rounded at the base, 5-nerved, serrulate, densely pubescent on both surfaces, rugose or bullate above; inflorescence a dichasium mostly 3-6 cm. long; hypanthium broadly tubular, 5-6 mm. long, densely stellate-pubescent and hirsute; sepals oblong-ovate, 2.5-3 mm. long, the outer teeth subulate, 1 mm. long; petals oblong-ovate, white or greenish white, 6-7 mm. long; anthers stout-subulate, 3.5-4 mm. long; ovary with gland-tipped bristles at the apex; style 7 mm. long.

Clidemia cymifera Donn.-Sm. Bot. Gaz. 14: 25. 1889; 18: 203, t. 21. 1893.

Moist or wet, mixed forest, 1,150–2,500 meters; endemic; Alta Verapaz (type, Pansamalá, *Tuerckheim* 709); Huehuetenango.

A shrub of 1–1.5 meters, the branches minutely stellate-puberulent when young, soon glabrate; leaves on slender petioles 1–3 cm. long, ovate, 5–12 cm. long, acuminate, rounded or subcordate at the base, 5-nerved, subentire, glabrous above, sparsely and very minutely stellate-puberulent beneath, chiefly on the nerves; panicles few-flowered, branched from near the base, the slender branches almost glabrous, the bracts 1 mm. long or less; pedicels 1 mm. long; hypanthium 3 mm. long, sparsely covered with minute short-stalked brownish stellate hairs; sepals broadly triangular, 1.5 mm. long, the exterior calyx teeth 2 mm. long, prolonged into a conic tip; petals cuneate or narrowly obovate, 8–9 mm. long; anthers thick-linear, 2.7 mm. long; ovary glabrous at the apex; style 6 mm. long.

Clidemia dentata D. Don, Mem. Wern. Soc. 4: 308. 1823.
C. brachystephana var. *longidentata* Cogn. in DC. Monog. Phan. 7: 990. 1891 (type from Livingston, Izabal, *S. Watson*).

Moist or wet thickets or mixed forest, often in second growth, 1,400 meters or less, most common at low elevations; Petén; Alta Verapaz; Izabal; Escuintla; Sololá; Quezaltenango; Retalhuleu; Huehuetenango. Southern Mexico; British Honduras to Panama; tropical South America to southern Brazil and Bolivia.

A rather slender, often densely branched shrub 1–4.5 meters high, the branches densely hirsute with spreading brown hairs 1–2 mm. long; leaves on petioles 5–10 mm. long or somewhat longer, oblong-lanceolate to oblong or elliptic, 10–20 cm. long and about one-third as broad, acuminate, obtuse or rounded at the base, often oblique, 5–7-plinerved, inconspicuously denticulate, short-setose above, hirsute beneath with hairs 1–2 mm. long, conspicuously more pubescent along the nerves on both sides; inflorescence a few-flowered or reduced cyme, 1–3 cm. long, spreading hirsute; hypanthium 3 mm. long, densely hirsute with long spreading hairs; calyx tube truncate, the outer teeth subulate, erect in fruit, 2–5 mm. long, hirsute; petals obovate, white or pink, 7 mm. long; anthers stout-subulate, 3–3.5 mm. long; style 4–5 mm. long; fruit at first red, becoming deep blue or purple at maturity.

To distinguish this species from the very closely allied *C. hirta* watch for leaves attenuate to the base with the inner pair of nerves rising above the base and somewhat alternate. The leaves of *C. hirta* are cordate and the nerves rise at one place at the base.

Clidemia diffusa Donn.-Sm. Bot. Gaz. 46: 112. 1908.

Dense wet mixed forest, 1,500–1,800 meters; endemic; Alta Verapaz (type from Purulhá, *Tuerckheim* II.1717; collected also between Tactic and Tamahú).

A slender shrub 1–2 meters high, the young branches sparsely hirsute with dark red hairs as much as 4 mm. long, glabrate in age; leaves on slender petioles 5 cm. long or less, thin, oblong-ovate or ovate, about 15 cm. long and 9 cm. broad or smaller, long-acuminate, rounded and subcordate at the base, 5-nerved, thin, obscurely denticulate, glabrous, pale beneath; inflorescences as much as 15 cm. long, hirsute, laxly branched, the flowers short-pedicellate, somewhat crowded; hypanthium 2 mm. long, glabrous, very minutely red-punctulate; sepals almost semicircular, 0.7 mm. long, the exterior teeth equaling the sepals, triangular-acuminate; petals obovate, 3 mm. long, pale yellow; anthers semiovoid, 1.5 mm. long; style 4 mm. long.

This species is noteworthy for its pale yellow flowers, and easily recognizable by the quite glabrous leaves.

Clidemia Donnell-Smithii Cogn. Bot. Gaz. 16: 5. 1891.

Wet mixed forest, 1,150–1,400 meters; endemic; Alta Verapaz (type from Pansamalá, *Tuerckheim* 1435).

Branches densely hirsute with slender spreading simple hairs as much as 6 mm. long, also with a close indument of very slender, appressed hairs 1–2 mm. long; leaves on stout petioles 2–4 cm. long, firm, ovate-oblong, as much as 15 cm. long and 7 cm. broad, acuminate, rounded at the base, 5-nerved, minutely denticulate, ciliate, sparsely hirsute above, densely villous beneath, the hairs 1–3 mm. long; inflorescences few-flowered, 2–3 cm. long, divaricately branched; hypanthium 2.7 mm. long, densely hirsute with reddish simple ascending hairs; sepals triangular, acute, 1.6 mm. long, the outer teeth divergent and curved-ascending, 3 mm. long; petals thick, oblong, 3.7 mm. long; anthers stout-fusiform, 2.3 mm. long; ovary glabrous at the apex; style 5.5 mm. long.

Clidemia fulva Gleason, Brittonia 3: 122. 1939.

Dense wet mixed forest or thickets, 1,500 meters or less, mostly at 300 meters or lower; Alta Verapaz; Izabal; Huehuetenango; type collected in Guatemala, the exact locality unknown, *H. Pittier* 276. Honduras.

Plants shrubby and 1.5 meters high, or herbaceous throughout or nearly so and much lower, the branches setose-hirsute with widely spreading, slender hairs as much as 11 mm. long; leaves on stout petioles 4 cm. long or shorter, oblong-ovate or ovate, about 15 cm. long and 7 cm. broad or even larger, acute or acuminate, often abruptly so, rounded or broadly obtuse at the base, 5-nerved, crenate-serrulate, ciliate, brownish-setose above with hairs 2–2.5 mm. long, setose beneath with hairs as much as 5 mm. long; inflorescence freely branched, lax, many-flowered, densely hirsute; bracts persistent, lanceolate, 10 mm. long or less, hirsute-ciliate, the pedicels 2 mm. long; hypanthium tubular-campanulate, 3.5–4 mm. long, densely hirsute with long slender spreading hairs, some of the hairs gland-tipped; sepals scarious, erect, 1.5 mm. long, semicircular, erose-ciliate, the outer teeth triangular-subulate, 5.5 mm. long or even longer, long-setose at the apex; petals narrowly obovate-oblong, 8 mm. long; anthers stout-linear; ovary glandular at the apex; style 4–4.5 mm. long.

Clidemia glandulifera Cogn. Bot. Gaz. 20: 289. 1895.

Type from San Miguel Uspantán, Quiché, 1,800 meters, *Heyde & Lux* 3329.

Branches densely tomentose with brown stellate hairs, also glandular-pilose; leaves on stout petioles 1.5–3.5 cm. long, ovate-oblong or ovate-lanceolate, as much as 22 cm. long and 12 cm. broad, subacuminate, rounded at the base, 5-nerved, obscurely denticulate and ciliate, densely pubescent above, densely tomentose beneath with short-stipitate stellate hairs; inflorescences as much as 10 cm. long, pubescent like the branches, the flowers densely aggregate at the ends of the branchlets; bracts subulate, 1 mm. long, the pedicels 1 mm. long or less; hypanthium tubular, 3.5 mm. long, thinly tomentose with subsessile stellate hairs, densely glandular-pubescent; sepals broadly ovate-triangular, 1.3 mm. long, the outer teeth arising near the ends of the sepals, divergent at a right angle, 0.3–0.4 mm. long; petals obovate, 3.5 mm. long; anthers linear-subulate, 3 mm. long; ovary glabrous at the apex; style 5.5 mm. long.

Clidemia hirta (L.) D. Don, Mem. Wern. Soc. 4: 309. 1823.

Melastoma hirta L. Sp. Pl. 390. 1753. *C. hirta* var. *elegans* Griseb. Fl. Brit. W. Ind. 247. 1860.

Moist or wet mixed forest or thickets, often in second growth, 1,300 meters or less, mostly at low elevations; Alta Verapaz; Izabal; Chiquimula. Southern Mexico; British Honduras to Panama; West Indies; tropical South America; naturalized as a weed in some parts of the Old World tropics.

A shrub, usually 1–1.5 meters high, hirsute throughout with long spreading brownish eglandular hairs; leaves of a pair sometimes unequal, on stout petioles 3 cm. long or less, ovate to broadly ovate, 5–15 cm. long, acute or short-acuminate, usually rounded and subcordate at the base, 5–7-nerved, serrulate or entire; inflorescences few-many-flowered, laxly branched, 3–5 cm. long, the flowers mostly 6-parted; hypanthium campanulate, 5 mm. long, hirsute; calyx truncate or obscurely lobate, the slender exterior teeth as much as 3 mm. long; petals white, oblong-obovate, 8–11 mm. long; anthers subarcuate, nearly 5 mm. long; ovary glabrous, the torus bearing a ring of conspicuous narrow lacinate scales; style 8 mm. long.

A very common and somewhat weedy shrub in many places along the Atlantic coast of Central America. The long hairs on the fresh plants are often or usually red.

Clidemia involucrata DC. Prodr. 3: 163. 1828.

Wet mixed forest, 500 meters or less; British Honduras; Trinidad; Guianas.

A shrub 1–3 meters high, blackening when dried, the branches densely hispidulous and glandular-pilose with long spreading hairs; leaves of a pair often very

unequal, on petioles 5–20 mm. long, ovate to oblong, 6–13 cm. long, acuminate, obtuse or rounded at the base, 5-plinerved, denticulate, ciliate, sparsely pilose on both surfaces; flowers few, in short-pedunculate bracteate capitate clusters, the peduncles 5–10 mm. long, the bracts 3–5 mm. long, persistent; hypanthium narrowly campanulate, 3.5–4 mm. long, soft-villous; sepals triangular-ovate, 1–1.5 mm. long, the outer teeth stout-subulate, projecting 0.5 mm. beyond the sepals; petals white, narrowly obovate, 4 mm. long; anthers subulate, 4.5 mm. long; style 3.5 mm. long.

Clidemia laxiflora (Schlecht.) Walp. ex Naud. Ann. Sci. Nat. ser. 3, 17: 376. 1852. *Melastoma laxiflorum* Schlecht. Linnaea 13: 426. 1839.

Moist or wet thickets or mixed forest, 900–1,700 meters; Chiquimula; Santa Rosa; Quiché; Quezaltenango; San Marcos; Huehuetenango. Southern Mexico.

A shrub of 1–2.5 meters, the young branches pubescent with mostly gland-tipped very short hairs, the youngest parts subtomentose with curved, somewhat plumose, short hairs; leaves on petioles 1.5–5 cm. long, thin, ovate, 15 cm. long and 8 cm. broad or smaller, acuminate or long-acuminate, rounded to subcordate at the base, 5–7-nerved, denticulate, ciliate, short-hirsute on both surfaces; inflorescence trichotomous from near the base, 10 cm. long and broad or smaller, lax, pubescent like the branchlets, the simple hairs mostly gland-tipped; bracts lance-subulate, 1 mm. long, the pedicels 3–4 mm. long; hypanthium 2 mm. long, densely short-hirsute, the hairs stout and subplumose, some of them often gland-tipped; sepals spreading, semicircular, 0.8 mm. long, the exterior teeth filiform, 3 mm. long; petals narrowly obovate, 4–4.5 mm. long; anthers stout-linear, 1.7 mm. long; ovary glabrous at the apex; fruit purple-black or bluish black.

This species may be recognized usually by the pubescence of the inflorescence, which consists principally of rather stout and short, tapering, puberulent hairs. It is closely related to *C. petiolaris* and may prove to be the same.

Clidemia Matudae L. Wms. Fieldiana, Bot. 29: 556. 1963.

Found in forests at about 1,400 meters; Guatemala. Mexico (type *Matuda* 15945).

Shrubs or small trees to 5–6 meters, branchlets terete, densely pubescent with intermixed soft, often stellate or barbellate hairs and glandular hirsute ones, the longest hairs mostly about 1 mm. long; leaves of a pair distinctly unequal, blade ovate-cordate, acuminate, obscurely denticulate, 7–9-plinerved, glabrous to sparingly hirsute above, densely puberulent below and hirsute along principal nerves, large blade (of pair) 13–20 cm. long and 8–14 cm. broad, smaller ones 8–12 cm. long and 7–8 cm. broad; petioles to 8 cm. long, pubescent as are the branchlets; inflorescence pseudoterminal, an elongated and rather few-flowered thyrses, to about 12 cm. long, with intermixed simple puberulence and hispid or glandular-hispid pubescence; hypanthium campanulate, subhispid-puberulent, about 4 mm.

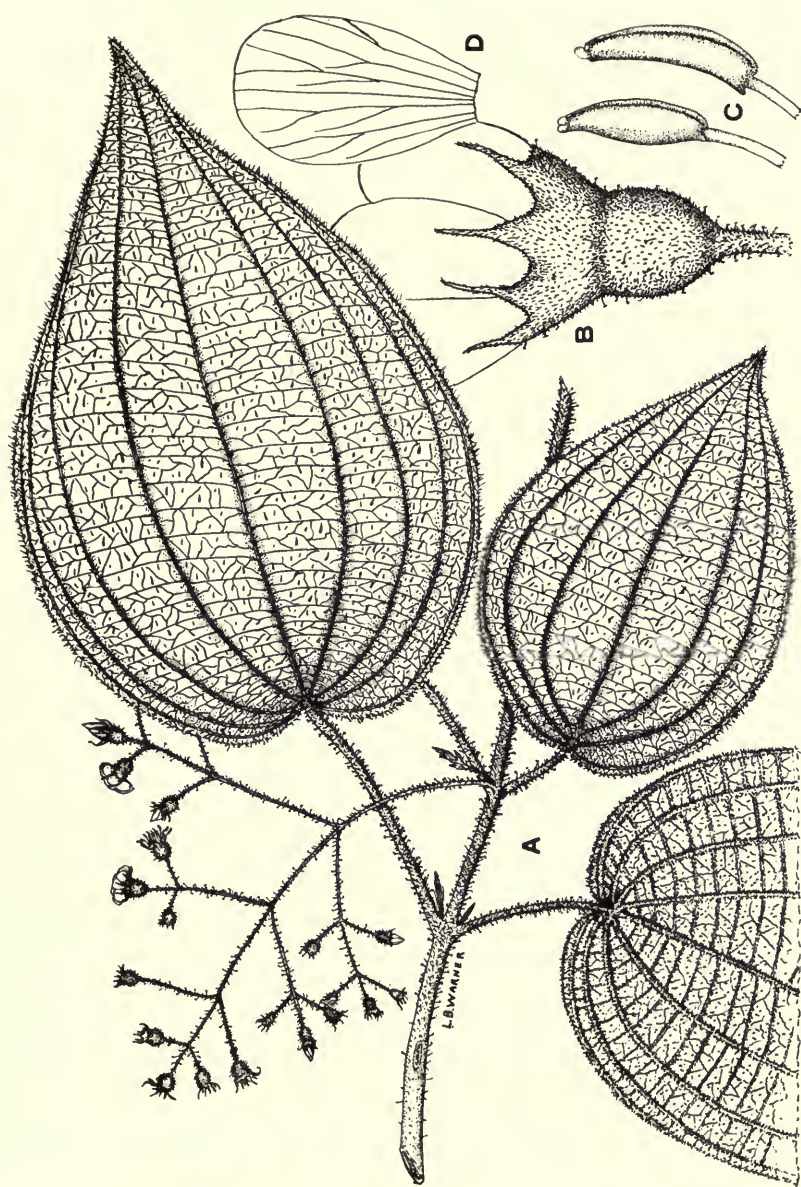


FIG. 64. *Clidemia Matudae*. A, Habit; $\times \frac{1}{2}$. B, Flower; $\times 5$. C, Anthers; $\times \pm 10$. D, Petal; $\times 5$.

long; calyx lobes 7-8, rounded, about 1.5 mm. long; exterior teeth subulate, 2-2.5 mm. long and much exceeding the calyx lobes; petals about 7, oblong-obovate, obtuse or retuse, about 5 mm. long and 3.5 mm. broad; stamens about 30-35, about 4 mm. long, the anther 1.5-2 mm. long, narrowly oblong, the connective unappendaged or but slightly umbonate at the base; style capitate, about 5 mm. long.

One of several species with pseudoterminal or terminal inflorescences. The known Mexican locality is near Guatemala.

Clidemia octona (Bonpl.) L. Wms. Fieldiana, Bot. 29: 558. 1963. *Melastoma octona* Bonpl. Mélast. 7, t. 4. 1816. *Heterotrichum octonum* DC. Prodr. 3: 173. 1828. *Cinco negritos* (San Marcos).

Moist or wet thickets or mixed forest, sometimes in pine forest or second growth, 1,500 meters or less, most frequent at low elevations; Alta Verapaz; Izabal; Santa Rosa; Escuintla; Suchitepéquez; Sololá; Retalhuleu; Quezaltenango; San Marcos. Southern Mexico; British Honduras to Panama; Cuba; northwestern South America south to Peru.

A shrub or small tree 1-5 meters tall, the branches, petioles, inflorescence, and hypanthium densely covered with 3 kinds of pubescence—short subsessile stellate hairs, longer spreading gland-tipped hairs, and very long (4-8 mm.) eglandular bristles; leaves thin, on slender petioles 3-8 cm. long, the blades ovate or broadly ovate, 12-20 cm. long, 6-13 cm. broad, acuminate, broadly rounded and subcordate at the base, 7-nerved, obscurely denticulate, long-setose above, pale beneath, hispid and softly stellate-pubescent; panicles few-many-flowered, 5-10 cm. long, the flowers 5-8-parted; hypanthium 4-5 mm. long; sepals triangular-ovate, 2 mm. long, the exterior teeth subulate, 3.5-4 mm. long; petals white, 8-10 mm. long; anthers subulate, 5-6 mm. long, the connective shortly prolonged at the base; style 7-10 mm. long; fruit juicy, dark blue or purple-black.

A common shrub in rain forest of the Atlantic lowlands of Central America. Called "*sarcil*" in Honduras; "*tesuate*" (Oaxaca).

Clidemia petiolaris (Schlecht. & Cham.) Schlecht. ex Triana, Trans. Linn. Soc. Bot. 28: 135. 1871; L. Wms. Fieldiana, Bot. 29: 559. 1963. *Melastoma petiolare* Schlecht. & Cham. Linnaea 5: 562. 1830. *M. serrulata* Schlecht. Linnaea 13: 425. 1839. *Clidemia Deppeana* Steudl. Nomencl. Bot. 384. 1840. *C. serrulata* Triana, l.c. *C. Naudiniana* Cogn. in DC. Monog. Phan. 7: 990. 1891. *C. laxiflora* var. *longipetiolata* Cogn. in Donn.-Sm. Bot. Gaz. 16: 5. 1891 (type from Alta Verapaz, Tuerckheim 707).

Wet thickets or mixed forest, often in second growth, at or little above sea level; Petén; Izabal; Alta Verapaz. Southern Mexico; British Honduras to Panama.

A slender shrub 1–1.5 meters high, the branches densely hirsute with appressed or ascending, brownish hairs; leaves on slender petioles 1–5 cm. long, thin, very variable in size and shape even on the same branch, mostly lance-ovate to oblong-ovate and 6–10 cm. long, acute or acuminate, acute to almost rounded at the base, 3-nerved, often conspicuously and irregularly dentate, soft-hirsute above, almost villous beneath, usually densely so; inflorescences 2–5 cm. long, divaricately trichotomous, lax, hirsute with spreading or somewhat ascending, simple hairs; hypanthium 3 mm. long, densely hirsute with spreading or ascending hairs as much as 2.5 mm. long, some of them usually gland-tipped; sepals thin, erect, broadly ovate, almost 1 mm. long, the outer teeth erect, slender-subulate, 1.5–2.5 mm. long; petals obovate-oblong, 4 mm. long, pink; anthers stout-subulate, 2 mm. long; ovary glabrous or minutely glandular-pubescent at the apex; style 4 mm. long; fruit red, or probably purple or black when mature.

Usually reported as *Clidemia Deppeana*, a name which was unnecessary when published.

Clidemia rubra (Aubl.) Martius, Nov. Gen. & Sp. 3: 152. 1829. *Melastoma rubrum* Aubl. Pl. Guian. 1: 416. 1775.

Moist or wet thickets or savannas or in pine or pine-oak forest, 1,500 meters or less, mostly at low elevations; Petén; Alta Verapaz; Izabal; Zacapa; Chiquimula. Southern Mexico; British Honduras to Panama; tropical South America.

A shrub about a meter high or frequently lower, often forming dense clumps, sometimes herbaceous almost throughout, the stems simple or branched, the branches and leaves densely hirsute or almost villous; leaves almost sessile or on petioles 1–2 cm. long, thick, oblong-lanceolate to broadly elliptic, usually about 10 cm. long and half as broad but variable in size, obtuse or short-acuminate, cuneate to rounded at the base, 5-plinerved, inconspicuously denticulate; flowers few, sessile in dense clusters in the leaf axils; hypanthium cylindric, 3.5–4 mm. long, the exterior teeth triangular-subulate, divergent, 1–1.5 mm. long, equaling or slightly exceeding the sepals; petals white or pink, obovate-oblong, 2–3 mm. long; anthers linear-subulate, 3–4 mm. long; ovary glabrous or glandular-setose at the apex; style 6–8 mm. long; fruit black or bluish, 4–5 mm. in diameter, juicy.

In Central America this low shrub grows most commonly in savannas, lowland pine forest, or on dry sterile open hillsides of the lower mountains. It is to be found in flower most of the year.

Clidemia setosa (Triana) Gleason, Bull. Torr. Bot. Club 58: 82. 1931. *Calophysa setosa* Triana, Journ. Bot. 5: 209. 1867. *Maieta setosa* Cogn. in Mart. Fl. Bras. 14, pt. 4: 462. 1888. *Hoja de danto* (Chimaltenango); *hembra* (Quezaltenango); *cinco negritos* (San Marcos); *hoja de hembra*; *hierba paridora*; *hierba de mico* (Huehuetenango); *ixqui-quen* (Verapaz); *hierba de la gigante* (fide Aguilar).

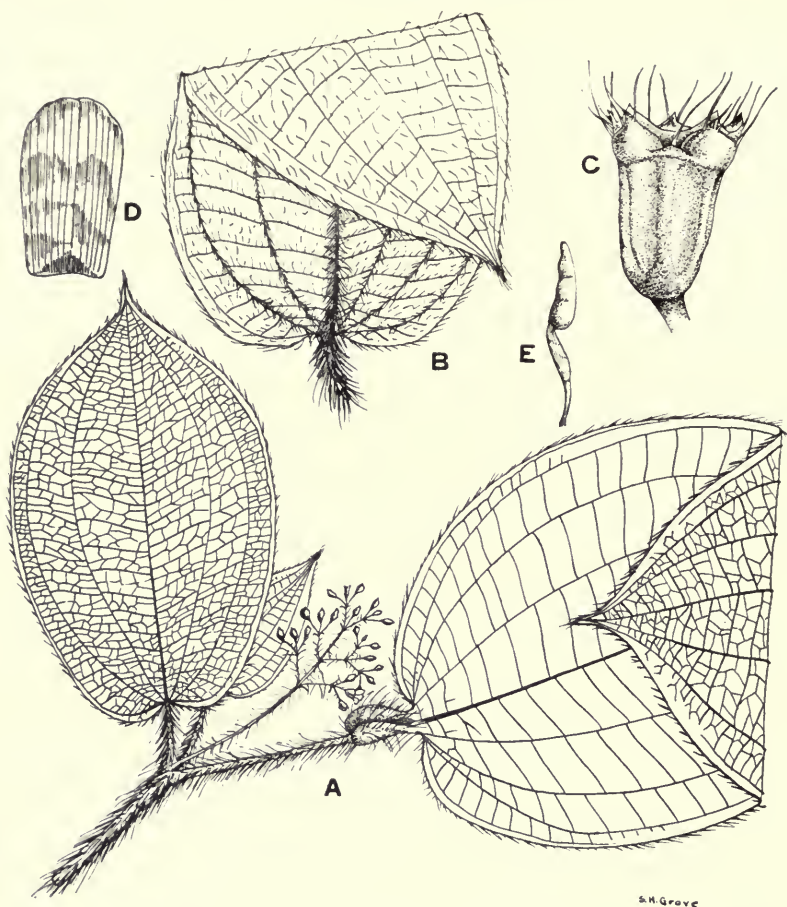


FIG. 65. *Clidemia setosa*. A, Habit; $\times \frac{1}{2}$. B, Leaf, showing both sides; $\times \frac{1}{2}$. C, Hypanthium and calyx; $\times 5$. D, Petal; $\times 5$. E, Stamen; $\times 5$.

Usually in dense, wet or moist, mixed forest, 1,600 meters or less; Alta Verapaz; Izabal; Escuintla; Suchitepéquez; Chimaltenango; Sololá; Quiché; Quezaltenango; San Marcos; Huehuetenango. Southern Mexico; British Honduras, along the Atlantic coast to Panama.

A coarse shrub or herb about a meter high, sometimes much lower, simple or sparsely branched, the branches densely setose-hispid with stout stiff retrorse setae 7–10 mm. long; petioles densely hispid, 2–5 cm. long, bearing at the apex 2 inflated sac-like hirsute formicaria 1.5–2 cm. long; leaf blades ovate to oblong-ovate, 20 cm. long and half as broad or mostly somewhat smaller, abruptly acute or short-acuminate, rounded or subcordate at the base, 5–7-nerved, sparsely long-hirsute above, somewhat paler beneath, sparsely or rather densely long-hirsute or sometimes almost wholly glabrous; inflorescences on long slender peduncles, trichoto-

mous, 3-8 cm. long, hispid; hypanthium campanulate, 2-2.5 mm. long, 4-angulate, sparsely setose; exterior calyx teeth subulate, 1.5 mm. long; petals 4, obovate-oblong, 5 mm. long, pale pink; anthers linear, 2.5 mm. long; ovary 4-celled; style 6 mm. long; berries blue-black.

The leaves often are dark purple or red on the lower surface. The abundant hairs of the stems are almost spine-like, making the plant a disagreeable one to handle. This is one of the most celebrated plants of Guatemala, well known in the country even in places where it does not grow, and also known far outside Guatemala. It is the *planta hembra par excellence*, the term obviously applied to it because of the general appearance of the pair of bulb-like formicaria at the base of the leaf blade. These "formicaria," so far as we know, are not inhabited by ants, but they look as if they should be, and similar organs in South American plants of the family are occupied by ants that bite severely. The present species is a fine example of the doctrine of signatures in practice of domestic medicine, since a decoction of the leaves, sometimes prepared almost ceremonially, is a favorite remedy for sterility in women. Dieseldorff remarks that its effect is doubtful, but in Guatemala perhaps as much faith is placed in it as in a pilgrimage to Esquipulas.

Clidemia strigillosa (Swartz) DC. Prodr. 3: 159. 1828; L. Wms. Fieldiana, Bot. 29: 560. 1963. *Melastoma strigillosa* Swartz, Fl. Ind. Occ. 793. 1800. *Clidemia reticulata* Gleason, Brittonia 3: 110. 1939.

Moist or wet thickets or forests, little above sea level; Izabal. British Honduras; Nicaragua; Costa Rica; Panama; British Guiana and Venezuela to Peru.

A shrub of 1-2 meters, the branches densely stellate-tomentose and sparsely glandular-hirsute; leaves rather thick, on petioles about 1 cm. long, lance-ovate, 8-14 cm. long, 3-6 cm. broad, acuminate or long-acuminate, rounded and shallowly cordate at the base, 7-nerved, finely serrulate, densely setose above, the hairs rising from large conic bases, finely reticulate-veined beneath and densely stellate-tomentose, more or less setose on the nerves; inflorescences oblong, congested or spreading, 3-10 cm. long, the flowers 5-parted, sessile along the axis or on lateral branches; hypanthium hemispheric, 3 mm. long, densely glandular-hirsute and stellate-tomentose; sepals oblong, 2 mm. long, the exterior teeth subulate, longer than the sepals; petals narrowly obovate, 4-5 mm. long, white; ovary with erect gland-tipped setae at the apex; style 3.5-4 mm. long.

Called "Maya" in Nicaragua.

Clidemia tococoidea (DC.) Gleason, Bull. Torr. Bot. Club 58: 81. 1931. *Calophysa tococoidea* DC. Prodr. 3: 166. 1828. *Maieta tococoidea* Cogn. in Mart. Fl. Bras. 14, pt. 4: 465. 1888. *M. toco-*

coidea var. *Watsonii* Cogn. in DC. Monog. Phan. 7: 979. 1891 (type from Finca Chocón, Izabal, S. Watson).

Wet forest at or near sea level; Izabal (known in Guatemala only from the type of the variety). British Honduras; Costa Rica; Panama; tropical South America.

A shrub a meter high or a small tree, the branches minutely stellate-furfuraceous and densely hirsute, the hairs 2–4 mm. long; formicaria at the base of the petiole as much as 1.5 cm. in diameter, pubescent like the branches; leaves on slender petioles 1–9 cm. long, those of a pair usually very unequal; leaf blades thin, broadly ovate, as much as 18 cm. long and 13 cm. broad, shortly cuspidate-acuminate, subcordate at the base, 5–7-nerved, crenate-denticulate, densely ciliate, sparsely setose above, setose beneath on the nerves, glabrous and resin-dotted elsewhere; inflorescences very small and dense, sessile or nearly so; bracts subulate, 1–2 mm. long; hypanthium narrowly campanulate, 3–3.5 mm. long, minutely puberulent; sepals triangular, obtuse, 1 mm. long, the outer teeth stout-subulate, spreading or decurved, 0.7 mm. long; petals obovate-oblong, 2 mm. long, white; anthers linear, 3.5 mm. long; ovary 4-celled; style 7–8 mm. long; berries black or bluish purple.

Clidemia trichocalyx (Blake) Gleason, Brittonia 3: 130. 1939.
Prosanerpis trichocalyx Blake, Contr. U. S. Nat. Herb. 24: 15. 1922.

Creeping on tree trunks in wet mixed forest, at or near sea level; Izabal. Honduras; Costa Rica.

A small slender shrub, climbing on tree trunks by aerial roots, the stems brownish-tomentose; leaves of a pair very unequal, the larger ones on petioles 5–10 cm. long, thin, broadly ovate, as much as 20 cm. long and 14 cm. broad but usually smaller, abruptly short-acuminate, rounded or subtruncate at the base, 7-nerved, denticulate, hirtellous above and beneath; smaller leaves only 1–3 cm. long, ovate-lanceolate, short-petiolate; panicles 1–2 cm. long, divaricately branched, rising below the leaves and half hidden among the roots and the mosses with which the plant usually grows, the branches sparsely furfuraceous; flowers 4-parted; hypanthium urceolate, 2 mm. long, hirsute; sepals semicircular, 0.5 mm. long, the exterior teeth foliaceous, obovate or rhombic, 2.5 mm. long, with a few setae along the margin; anthers oblong; ovary 4-celled.

Clidemia Tuerckheimii (Donn.-Sm.) Gleason, Brittonia 3: 123. 1939. *Leandra Tuerckheimii* Donn.-Sm. Bot. Gaz. 47: 254. 1909.

Wet mixed forest, 1,500–1,600 meters; endemic; Alta Verapaz (type from Cobán, *Tuerckheim* II.2369; collected also on Cerro Sillab, Senahú).

A shrub or small tree, the branches and petioles densely strigose; leaves on stout petioles 2–3 cm. long, thick, oblong to lance-ovate, 10–13 cm. long, 4.5–6 cm. broad, acuminate, rounded at the base, 7-plinerved, the innermost nerves arising far above the base of the blade, finely denticulate, ciliate, scabrous-hirsute above, the hairs arising from broadly conic bases, foveate beneath, strigose on the nerves,

soft-villous on the veins; panicles trichotomous from the base, about 10 cm. long and broad, many-flowered, strigose; bracts subulate, 1.5–2 mm. long, the pedicels 1–2 mm. long; flowers 5-parted, the hypanthium campanulate, 2.2 mm. long, densely strigose with pale hairs; sepals depressed-ovate, obtuse, glabrous, 1 mm. long, the outer teeth triangular-subulate, 4–4.5 mm. long; ovary 5-celled.

CONOSTEGIA D. Don

Shrubs or trees, glabrous or pubescent, often with furfuraceous or stellate pubescence; leaves often large or very large, petiolate, 3–5-nerved or 3–5-plinerved, entire or denticulate; flowers small or rather large, usually white, sometimes pink, in terminal panicles, 5–10-parted; calyx calyptiform, at anthesis circumscissile near its base; hypanthium cupular, thick-walled; petals usually obovate or obcordate, thickened toward the base, many-nerved; stamens isomorphic, 2–5 times as many as the petals, the filaments slender, glabrous; anthers linear or oblong, 4-celled, laterally compressed, the connective neither prolonged nor appendaged; ovary wholly inferior, often concave at the apex or prolonged into a ring about the base of the style, the cells as many as the petals or more numerous; style columnar, the stigma truncate, capitate, or broadly peltate; fruit baccate, juicy, many-seeded; seeds obovoid, angulate.

Species 50 or more; 45 have been described from tropical continental North America, chiefly in the mountains. The wood is usually brownish, moderately dense and fine-textured. No use is made of the wood unless for fuel.

Mature leaves from densely hirsute to stellate or stellate-tomentose beneath over the whole surface.

Leaves whitish or grayish beneath, densely and finely stellate-tomentose.

C. xalapensis.

Calyptra with longitudinal dorsal appendages; pubescence of flowers plumose or plumose-stellate. *C. plumosa.*

Calyptra without appendages; pubescence stellate. *C. xalapensis.*

Leaves green beneath, with long-stipitate stellate hairs or brownish with sessile stellate hairs.

Leaves with stipitate stellate hairs below. *C. caelestis.*

Leaves with sessile stellate hairs below. *C. volcanalis.*

Mature leaves glabrous beneath on the surface or practically so, green, often furfuraceous or stellate-puberulent or even hirsute on the nerves.

Buds small, the calyx tube usually 3–4 mm. broad at the line of dehiscence.

Leaves large, mostly 9–15 cm. broad. *C. superba.*

Leaves relatively small, all or chiefly 3–7 cm. broad.

Leaves rounded at the base, ovate. *C. viridis.*

Leaves acute at the base or sometimes obtuse, oblong-lanceolate.

C. hirtella.

Buds large, the calyx tube 5–8 mm. broad at the line of dehiscence.

Leaves conspicuously 5-plinerved, the main lateral pair of veins arising much above the base, blades mostly 6–8 cm. broad or more. . . . *C. volcanalis.*

Leaves 3- or 5-nerved (always 5-nerved?), the outer lateral pair often inconspicuous, the main lateral pair arising near the base, blades mostly 2.5-5.5 cm. broad..... *C. icosandra*.

Conostegia caelestis Standl. Field Mus. Bot. 4: 318. 1929.
C. hondurensis Standl. Field Mus. Bot. 9: 322. 1940.

In forests or scrub up to about 650 meters. British Honduras (type, *Schipp* 63); Honduras (type of *C. hondurensis*, *Yunker et al.* 8818); and Nicaragua.

A tree or shrub to 7.5 meters tall, the trunk to 10 cm. in diameter, the inflorescence, branches, and petioles densely covered with long-stipitate stellate hairs; leaves on stout petioles 1-2 cm. long, thin, elliptic-oblong, 10-20 cm. long, 4-8 cm. broad, caudate-acuminate, acute or subobtuse at the base, minutely denticulate, 3-nerved, with an extra obscure nerve on each side close to the margin, hirsute above with simple hairs, stellate-hirsute beneath with long-stipitate hairs; panicles 5-10 cm. long, rather dense, many-flowered; buds obovoid, obtusely pointed, 6-7 mm. long; petals 5, obcordate, 6 mm. long, white; stamens 20, the anthers narrowly oblong, 2.5 mm. long; ovary 10-celled; style 3.5 mm. long, the stigma capitate, 1 mm. broad.

Conostegia hirtella Cogn. in Donn.-Sm. Bot. Gaz. 16: 4. 1891.
C. Gleasoniana Standl. & Steyerl. Field Mus. Bot. 22: 361. 1940
(type from Alta Verapaz, *Standley* 70317).

Often common, mostly in dense, moist or wet, mixed forest, sometimes in forested or open swamps, frequently or perhaps normally on limestone, 1,200-1,650 meters; endemic; Alta Verapaz (type from Pansamalá, *Tuerckheim* 1233).

A shrub of 1-3 meters or sometimes a small tree, the branches rather slender, at first densely stellate-pubescent with sessile or stipitate hairs; leaves on slender petioles 1-2.5 cm. long, mostly oblong-lanceolate, generally 7-15 cm. long and 3-5.5 cm. broad, narrowly acuminate, acute or obtuse at the base, rather thin, entire or nearly so, essentially 3-plinerved but with an inconspicuous extra nerve on each side close to the margin, almost glabrous on both surfaces but minutely stellate-pubescent beneath on the nerves; panicles stellate-pubescent or glabrate, 1 cm. long or shorter, often shorter than the leaves, mostly many-flowered, the flowers 5-parted, pedicellate; buds narrowly obovoid, about 6 mm. long and 3.5 mm. broad, minutely puberulent or glabrate; petals broadly obovate, 5-6 mm. long, white; anthers oblong-linear, 2.5 mm. long; style stout, 3 mm. long, the stigma obtuse.

Conostegia icosandra (Sw.) Urban, Fedde Rep. Sp. Nov. 17: 404. 1921. *Melastoma icosandrum* Swartz ex Wikstr. Svensk. Vet. Akad. Handl. 1827: 64. 1827. *Conostegia subhirsuta* DC. Prodr. 3: 174. 1828. *C. Bernoulliana* Cogn. in DC. Monog. Phan. 7: 698. 1891 (type from Guatemala, *Bernoulli* & *Cario* 2884). *C. Lundellii* Glea-



S. H. Grove

FIG. 66. *Conostegia icosandra*. A, Habit; $\times \frac{1}{2}$. B, Flower dissected; $\times \pm 1 \frac{1}{2}$. C, Stigma; much enlarged. D, Petal; $\times 2$. E, Stamen; $\times 3$.

son, Carnegie Inst. Wash. Publ. 522: 348. 1940 (type from British Honduras, *Lundell* 6587).

Moist or wet thickets or mixed forest, often in second growths, 2,500 meters or less; Alta Verapaz; Izabal; Zacapa; Quiché; Huehuetenango. Southern Mexico to Panama; the West Indies, rare in tropical South America.

Usually a shrub of 2-3 meters but sometimes a tree as much as 12 meters high, the young branchlets and petioles thinly stellate-puberulent or almost glabrous; leaves on petioles 1-4 cm. long, rather thick, elliptic or oblong-elliptic, mostly 10-20 cm. long and 5-10 cm. broad, acute or abruptly acuminate, acute to rounded at the base, 5-plinerved, entire or undulate, glabrous above, usually stellate-puberulent beneath on the nerves and generally sparsely hirsute with stellate-tipped hairs; panicles generally small and rather few-flowered, stellate-puberulent or stellate-hirsute; buds broadly obovoid, 7-9 mm. long, 6-7 mm. broad, usually broadly rounded and often minutely apiculate at the apex, glabrous or nearly so,

or densely stellate-furfuraceous; petals mostly 8, white, broadly obcordate, 8–10 mm. long; stamens 16–28, the anthers oblong, 3.5 mm. long; ovary about 12-celled, the style 5 mm. long; stigma peltate, 3 mm. broad, radiately 12-lobate.

A widely distributed and variable species to which still other Central American species possibly should be referred.

Conostegia plumosa L. Wms. Fieldiana, Bot. 29: 562. 1963.

Known only from British Honduras, jungle near Middlesex (type *W. A. Schipp* 232).

A small tree 8 meters tall, the trunk about 10 cm. in diameter, the branches and petioles at first densely stellate or plumose-stellate pubescent, both becoming glabrous with age; leaves elliptic-lanceolate, acuminate, acute or cuneate to the base, denticulate, 5-plinerved with the outer pair of nerves arising near the base of the blade and the inner pair 1 cm. or more above the base, the nerves of each pair arising at different places on the mid-nerve, the upper surface densely stellate pubescent but soon becoming glabrous or nearly so, dense and persistent stellate-pubescent completely covering the under surface, blades 6–18 cm. long and 2.5–5.5 cm. broad, those of a pair apparently very unequal, petioles 1.5–2.5 cm. long; inflorescences terminal or pseudolateral, densely pubescent with stellate or plumose hairs, dichasioid with the lateral branches congested and subcapitate at first, the branches of the inflorescence elongating (to about 4 cm.) with age and spicate and somewhat fractiflex, with reflexed linear-lanceolate bracts opposite or perhaps subtending the flowers; flowers to about 8 mm. long, white; hypanthium 2–3 mm. high and 3–4 mm. broad, subglobose, densely plumose or stellate pubescent; calyx calyptriform, falling away as a unit, conic, with 6 longitudinal subapical appendages about equaling the calyptra, pubescence as on the hypanthium; petals 6, ovate or subrhombic-ovate, about 5 mm. long and 3 mm. broad; anthers about 2.5–3 mm. long.

The species is unusual because of the curious pubescence and the appendages on the calyptra.

Conostegia superba D. Don, Mem. Wern. Soc. 4: 317. 1823.
C. Purpusii Brandege, Univ. Calif. Publ. Bot. 6: 57. 1914 (type from Mexico).

Moist or wet, mixed forest, 400–1,250 meters; Sololá; San Marcos. Southern Mexico; Costa Rica; Jamaica.

A large shrub or a small tree, sometimes 6 meters high, very minutely puberulent on the young branches, petioles, and nerves of the lower leaf surface, elsewhere glabrous or nearly so; leaves large and thin, on petioles 3–12 cm. long, ovate or broadly elliptic, mostly 15–30 cm. long and 10–19 cm. broad, abruptly and very shortly cuspidate-acuminate, rounded at the base, 5-plinerved, remotely denticulate, lustrous above, somewhat paler beneath; panicles usually long-pedunculate, mostly 10–15 cm. long, open and many-flowered, the flowers pedicellate, 5-parted; buds subacute, 6–7 mm. long, 3–4 mm. broad, glabrous or nearly so; petals white, 5–6 mm. long; stamens about 15, the anthers 3 mm. long; style filiform, 4 mm. long, the stigma capitate.

Conostegia viridis Cogn. in Donn.-Sm. Bot. Gaz. 20: 286. 1895.
?C. viridis var. *angustifolia* Cogn. ex Donn.-Sm. Enum. Pl. Guat. 3:
 28. 1893, *nomen* (Primavera, Shannon 487). *Matilizuate; cacho de*
venado.

Pacific slopes to 750 meters, endemic. Sololá; Escuintla; Retalhuleu (type *J. D. Smith* 2650).

Young branches, petioles, and inflorescence rather densely furfuraceous-puberulent; leaves membranaceous, on petioles 2.5–3.5 cm. long, ovate, 10–13 cm. long, 6–7 cm. broad, short-acuminate, rounded or submarginate at the base, 5-plinerved, minutely dentate, ciliate, punctate-furfuraceous above and sparsely short-hirsute, stellate-furfuraceous beneath on the nerves, elsewhere glabrate; flowers 5-parted, subsessile, the panicles corymbiform, many-flowered, almost 10 cm. long; buds narrowly obovoid, obtusely short-pointed, 6–7 mm. long, 4 mm. broad; petals obovate, 5 mm. long; anthers oblong, almost 2 mm. long; style stout, 5 mm. long, the stigma not dilated; fruit blackish, depressed-globose, 5–6 mm. in diameter.

Conostegia volcanalis Standl. & Steyerl. Field Mus. Bot. 23: 136. 1944.

Moist or wet, mixed forest, sometimes on white sand slopes, 1,300–1,800 meters; Alta Verapaz; Quezaltenango (type from Chiquihuite, *Standley* 68152); San Marcos. Mexico; Honduras.

A shrub or a tree of 6–9 meters, with a short thick trunk and a broad rounded crown, the stout branchlets densely furfuraceous-puberulent with a brownish stellate tomentum; leaves firm-membranaceous, undulate-dentate, at least above the middle, on slender petioles 2.5–4 cm. long, elliptic or broadly elliptic, 12–24 cm. long, 6–15 cm. broad, shortly cuspidate-acuminate, acute or broadly cuneate at the base, conspicuously 5-plinerved, with the inner nerves arising 1–2.5 cm. above the base of the blade, glabrous above, rather densely stellate-tomentulose beneath, especially on the nerves and veins, or glabrate; panicles on long or short peduncles, divaricately branched, many-flowered, stellate-puberulent or glabrate, about as long as the leaves, the flowers on long stout pedicels; buds subglobose, 7–9 mm. long and broad, rounded and obscurely apiculate at the apex, sparsely and very minutely puberulent or almost wholly glabrous; anthers narrowly oblong, 3 mm. long; ovary deeply depressed at the apex, glabrous, about 12-celled.

Conostegia xalapensis (Bonpl.) D. Don, Mem. Wern. Soc. 4: 317. 1823. *Melastoma xalapensis* Bonpl. Mélast. 126, t. 54. 1816. *C. lanceolata* Cogn. in DC. Monog. Phan. 7: 708. 1891. *C. xalapensis* f. *canescens* Cogn. ex Donn.-Sm. Enum. Pl. Guat. 2: 21. 1891, *nomen*. *C. xalapensis* f. *parvifolia* Cogn. ex Donn.-Sm. l.c. 3: 28. 1893, *nomen*. *Sirín; sirino; tamborcillo* (Guatemala); *cachito; cinco negritos* (Quezaltenango); *toltejillo; pasita* (Petén); *guabón; chehé* (Quechí); *dojcheje* (Cobán); *zapotillo; tinajito* (fide Aguilar).

Moist or wet, open or brushy hillsides, abundant in second growth, common in pastures, sometimes on rather dry, open hillsides, frequent in open pine forest, 1,800 meters or less; Petén; Alta Verapaz; Baja Verapaz; El Progreso; Izabal; Chiquimula; Jutiapa; Santa Rosa; Esquintla; Guatemala; Sacatepéquez; Suchitepéquez; Sololá; Retalhuleu; Quiché; Quezaltenango; San Marcos. Mexico; British Honduras to El Salvador and Panama; Cuba; Colombia.

A shrub or small tree, sometimes 6 meters high, usually lower, with a dense, rounded or spreading crown and a low thick trunk, the branchlets densely stellate-tomentose; leaves rather thick, on stout petioles 1-4 cm. long, ovate to lance-oblong, mostly 8-20 cm. long and 2-7 cm. broad, acute or acuminate, acute to rounded at the base, 5-plinerved, conspicuously dentate or denticulate, green above, stellate-puberulent or glabrate, whitish or pale brownish beneath, usually very densely and minutely stellate-tomentulose, rarely glabrate; panicles usually widely branched and many-flowered, rather dense, 10-20 cm. long, densely stellate-tomentulose, the flowers sessile, glomerate; buds pyriform, pointed, 5-7 mm. long; petals 5, pink, 4-6 mm. long; stamens 10, the anthers 2.5-3 mm. long; ovary 5-celled; style 4-5 mm. long, the stigma small, truncate.

Sometimes called "*uva*" in British Honduras and Honduras; "*capiroto*" (Honduras); "*sarcil*" (Honduras); "*tesuate*," "*tesuate Colorado*," "*sedita*" (Oaxaca). This is the most widely distributed and most abundant of the woody melastomes of Central America, being found in almost all parts of the region at suitable elevations and under congenial climatic conditions, in which the species is not very discriminating. It is most abundant in the lower mountains in cut-over areas or in pastures, where the seeds probably are scattered by birds or even by domestic animals that eat the fruit. In many localities of Guatemala the shrub is abundant, particularly in the west, where it often is the dominant plant. It may be recognized from a long distance by its whitish foliage and large quantities of pink flowers, which make it rather handsome in appearance. About Cobán almost every pasture contains large numbers of the bushes. On the Pacific slope the shrub occupies a rather definite altitudinal belt; for instance, leaving Escuintla it soon appears on the hillsides, then grows in abundance halfway or more up the slopes to the divide on the road to Santa María Jesús. The wood is sometimes used for fuel and for fencing. The ripe fruits much resemble northern blueberries and have a similar flavor. They are much eaten by children and agricultural laborers and occasionally appear in the markets. They are eaten much more commonly in El Salvador than in Guatemala, where food is more plentiful and less use is made of the wild plants. The usual name for this and many other shrubs of the family in northern Central America is "*sirin*" or "*cirin*."



FIG. 67. *Graffenrieda Galeottii*. A, Habit; $\times \frac{1}{2}$. B, Flower, partially dissected; $\times \pm 4$.

GRAFFENRIEDA De Candolle

Shrubs or trees, glabrous or pulverulent on the younger parts, the branches subterete; leaves coriaceous or chartaceous, long-petiolate, entire, oblong to rounded, 3-7-nerved; flowers small, 4-9-parted, white, yellow, or pink, in large terminal panicles (ours), usually subumbellate at the ends of the branchlets; calyx in bud ovoid, furfuraceous or pulverulent, the hypanthium hemispheric or short-campanulate, the calyx closed, calyptriform (in ours) or rupturing regularly or irregularly, acuminate, in anthesis circumscissile and deciduous (in ours); petals obovate-spatulate, acuminate; stamens twice as many as the petals, equal or nearly so; anthers linear-oblong, somewhat recurved, opening by a single apical pore, the connective somewhat produced below the cells, prolonged posteriorly beyond the insertion of the filament into a very acute, porrect spur; ovary free, ovoid-oblong, substrate, 4-6-celled, pulverulent; style filiform, the stigma puncti-

form; fruit capsular, oblong, usually longer than the calyx, 4-6-valvate to the base; seeds acicular, the embryo central, the testa slender-elongate at the end.

About 30 species ranging from Mexico to Bolivia, one or perhaps two other species in Costa Rica and Panama.

Graffenrieda Galeottii (Naudin) L. Wms. Fieldiana, Bot. 29: 563. 1963. *Calyptrella Galeottii* Naudin, Ann. Sci. Nat. ser. 3, 18: 115. 1852.

In second growth forest, 330 meters, Quiché (*Skutch* 1781). Mexico (Oaxaca); Costa Rica; Panama; Colombia.

A shrub or small tree to 6 meters tall, the young branches somewhat fistulose, glabrous or nearly so; leaves on petioles 2.5-8 cm. long, rather thin, yellowish green when dried, oblong-ovate to broadly elliptic, 10-20 cm. long, 10 cm. broad or narrower, abruptly and shortly obtuse-acuminate, rounded or obtuse at the base, 5-nerved, glabrous or very minutely and obscurely puberulent beneath on the nerves; panicles large and broad, many-flowered, open, pedunculate, as much as 30 cm. long; hypanthium broadly campanulate, minutely puberulent, 2 mm. long; calyx conical, 3 mm. long; petals pink or white, 4 mm. long; ovary 4-celled.

Apparently a very rare plant in Mexico and Guatemala. The two or three North American species have been called *Calyptrella* Naudin, of which this is type species, but that genus seems scarcely distinct from *Graffenrieda*.

HENRIETTEA De Candolle

Reference: Louis O. Williams, Fieldiana, Bot. 29: 564. 1963.

Shrubs or trees, glabrous or usually variously pubescent; leaves generally petiolate, mostly subcoriaceous, entire or inconspicuously serrulate, 3-5-nerved or 3-5-plinerved; flowers small to rather large, 4-6-parted, sessile or short-pedicellate, fasciculate at defoliated nodes or rarely in the leaf axils; hypanthium globose or campanulate, the calyx tube from obsolete to somewhat prolonged; sepals ovate to triangular, depressed semicircular, or obsolete, the exterior teeth subapical, minute, conic or short-subulate or none; petals ovate to lanceolate, acuminate to obtuse, usually thickened or cucullate toward the apex, or appendaged on the upper side; stamens isomorphic, the filaments slender, glabrous; anthers oblong to subulate, obtuse or retuse, opening by a terminal pore; connective simple or rarely somewhat prolonged below the cells, sometimes produced below the filament into a short dorsal appendage; ovary 4-5-celled; style slender to stout, the stigma capitate, truncate, or punctiform; fruit baccate, many-seeded.

Species fifty or sixty, including those described as *Henriettella*, most abundant in the West Indies and South America. One other species is known in Central America. *Henriettella* Naudin is a generic synonym.

Leaf blades bearing formicaria at the base; branches hirsute with long spreading hairs 3–7 mm. long. *H. cuneata*.

Leaf blades without formicaria; branches strigose, furfuraceous-tomentose, or hirsute with much shorter hairs.

Hypanthium glabrous, or nearly so. *H. fascicularis*.

Hypanthium densely pubescent to strigose.

Petioles 1–4 mm. long; leaves pulvinate-stellate on the veins below.

H. densiflora.

Petioles 10 mm. or more long; leaves hirsute on the veins below.

Anthers linear; lower surface of leaf not completely covered by the stellate hairs; leaves more than half as broad as long, obtuse or rounded at the base. *H. Seemannii*.

Anthers subulate, rostrate; lower surface of leaf completely covered by stellate hairs; leaves less than half as broad as long, cuneate or acute at the base. *H. succosa*.

Henriettea cuneata (Standl.) L. Wms. Fieldiana, Bot. 29: 565. 1963. *Maieta cuneata* Standl. Field Mus. Bot. 8: 30. 1930. *Henriettella cuneata* Gleason, Bull. Torr. Bot. Club 58: 75. 1931.

Dense wet mixed forest, 150 meters or less; Izabal. British Honduras, the type from Middlesex, *W. A. Schipp* 320.

A shrub of 3 meters, the branches, petioles, and leaves densely hirsute with simple, brown, widely spreading, stiff hairs 3–7 mm. long; leaves membranaceous, on stout petioles 1–1.5 cm. long; formicaria at the base of the leaf blades didymous, 1.5 cm. long; leaf blades elliptic-ovate or cuneate-ovate, 10–22 cm. long and half as broad, obtuse or rounded at the apex and short-caudate, cuneate at the base, 5-plinerved; flowers 5-parted, the hypanthium globose, 2–2.5 mm. long, hirsute with slender hairs 2 mm. long; sepals triangular, 0.5 mm. long; petals ovate-lanceolate, 2 mm. long, inflexed-cucullate at the apex, with a subapical exterior tooth, white; anthers oblong, 2 mm. long.

This is the only known species of *Henriettea* that bears formicaria.

Henriettea densiflora (Standl.) L. Wms. Fieldiana, Bot. 29: 565. 1963. *Henriettella densiflora* Standl. Field Mus. Bot. 4: 247. 1929. *Clidemia densiflora* Gleason, Phytologia 3: 346. 1950.

Wet mixed forest or thickets, at or little above sea level; Izabal. British Honduras; Honduras; Panama.

A slender shrub 1.5 meters high, the branchlets, petioles, and flowers densely furfuraceous-tomentose with curved subpaleaceous hairs as much as 1 mm. long; leaves membranaceous or thick-membranaceous, on stout petioles 1–4 mm. long, narrowly elliptic or oblong-elliptic, 12–20 cm. long, 4–8 cm. broad, long-acuminate, acute or cuneate at the base, 3-nerved with an additional pair of inconspicuous nerves close to the margin, entire or nearly so, glabrous and often lustrous above, densely furfuraceous beneath on the nerves, glabrous on the surface;

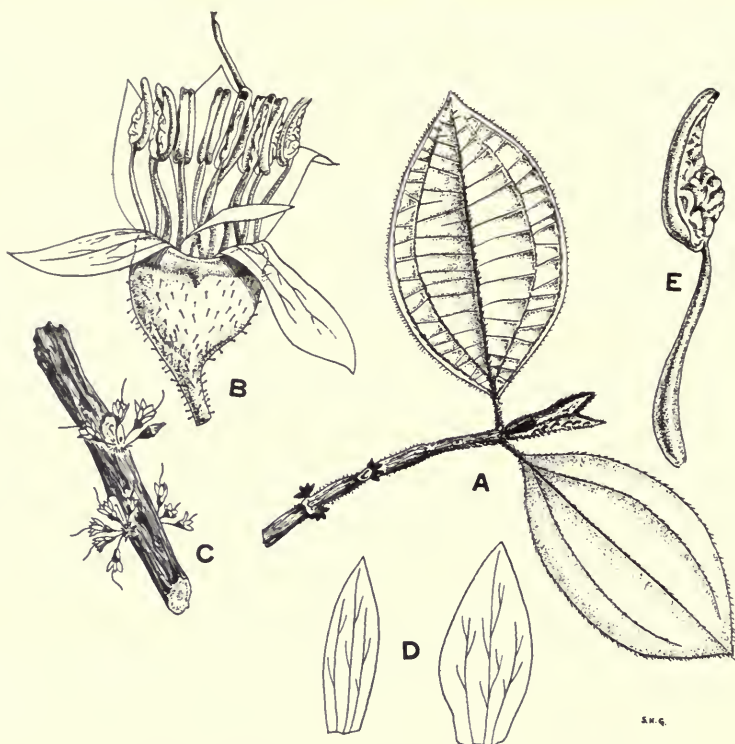


FIG. 68. *Henriettea fascicularis*. A, Habit; $\times \frac{1}{2}$. B, Flower; $\times 5$. C, Inflorescences on old wood; $\times 1$. D, Petals from same flower; $\times 5$. E, Anther; $\times 8$.

flowers few, sessile in the leaf axils or at defoliated nodes, crowded; hypanthium cupular, 2–2.5 mm. long; sepals triangular, 1.3 mm. long, acute, furfuraceous within, the exterior teeth 0.2 mm. long; petals oblong, 2.8 mm. long, subacute, somewhat cucullate at the apex, white; anthers oblong, 2 mm. long; style 4 mm. long, the stigma punctiform; fruit orange.

Called “sirín” in Honduras.

Henriettea fascicularis (Sw.) Gomez, Anal. Hist. Nat. Madrid 23: 68. 1894. *Melastoma fascicularis* Swartz, Prodr. 71. 1788. *Ossaea fascicularis* Griseb. Fl. Br. W. Ind. 246. 1860. *Henriettella fascicularis* Triana, Trans. Linn. Soc. Bot. 28: 143. 1871.

Wet thickets or mixed forest, 650 meters or less; Petén; Izabal. British Honduras; Costa Rica; Panama; Greater Antilles.

A shrub or small tree, sometimes 8 meters high, the young branches densely hirsute with short broad-based hairs; leaves on stout petioles 1–2 cm. long, firm-membranaceous, broadly elliptic to oblong-elliptic, 8–16 cm. long, acute or obtuse, obtuse or acute at the base, 3-plinerved with an additional pair of inconspicuous marginal nerves, entire, rather sparsely scabrous on the upper surface or glabrate,

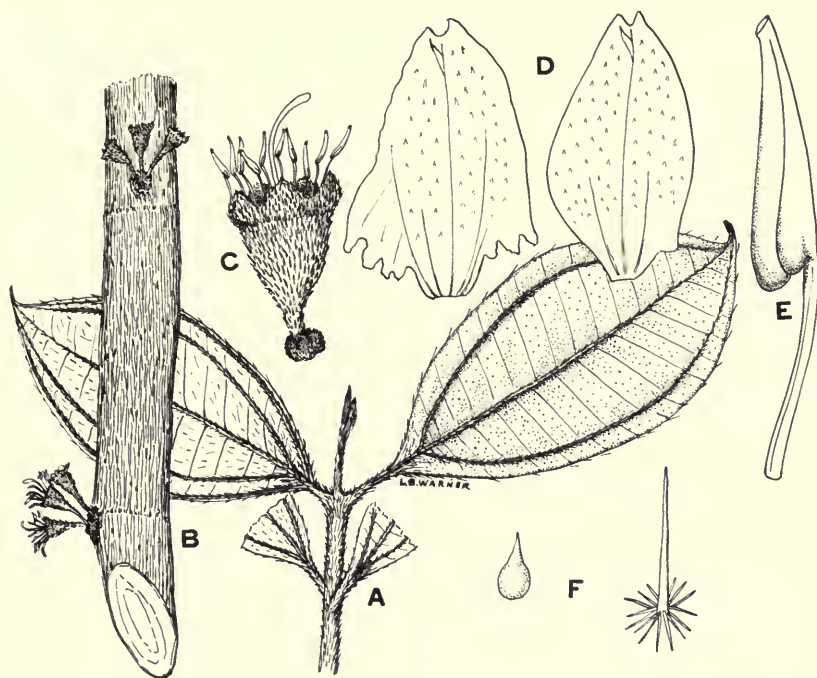


FIG. 69. *Henriettea Seemannii*. A, Habit; $\times \frac{1}{2}$. B, Inflorescences on old wood; $\times 1$. C, Flower, petals removed; $\times 2\frac{1}{2}$. D, Petals from same flower; $\times 5$. E, Stamen; $\times 10$. F, Trichomes; much enlarged.

densely scabrous or short-hirsute beneath with thick hairs; flowers on pedicels 3–6 mm. long or at first subsessile, mostly at naked nodes below the leaves; hypanthium campanulate, 3 mm. long or shorter, minutely glandular-pubescent; sepals depressed-ovate, 0.8 mm. long, the exterior teeth reduced to thickened ridges; petals ovate, acute, 4 mm. long, white; anthers oblong, 2 mm. long; style 5 mm. long; fruit globose, blackish, 5–6 mm. in diameter.

Henriettea Seemannii (Naudin) L. Wms. Fieldiana, Bot. 29: 566. 1963. *Henriettella Seemannii* Naudin, Ann. Sci. Nat. ser. 3, 18: 108. 1852. *Henriettea strigosa* Gleason, Carn. Inst. Wash. Publ. 522: 340. 1940.

Moist or wet, pine or mixed forest, little above sea level; endemic; British Honduras (*Gentle* 1947, type of *H. strigosa*); Panama; Colombia.

A small tree, the trunk 5–15 cm. in diameter, the branches densely strigose; leaves on stout petioles 1–2 cm. long, obovate-elliptic to oval, 9–18 cm. long, 5–11 cm. broad, rounded or obtuse and abruptly apiculate at the apex, obtuse or rounded at the base, 3-plinerved with an additional pair of obscure nerves close to the margin, ciliate, pustulate-scabrous above or glabrate, beneath strigose on

the nerves, thinly stellate-hirsute on the surface; flowers few, fasciculate, on strigose pedicels 1-2 mm. long; hypanthium campanulate, 6 mm. long, densely strigose; sepals broadly ovate, 3 mm. long, pubescent within, the exterior teeth minute; petals triangular-ovate, 8-9 mm. long, erose on one side; anthers linear or almost subulate, 4.5 mm. long; style glabrous, 11-12 mm. long.

Henriettea succosa (Aubl.) DC. Prodr. 3: 178. 1828. *Melastoma succosa* Aubl. Pl. Guian. 418, t. 162. 1775. *Henriettella macrocalyx* Standl. Field Mus. Bot. 8: 31. 1930 (type from Stann Creek Railway, British Honduras, *M. A. Schipp* 388). *Henriettea macrocalyx* Gleason, Brittonia 2: 324. 1937.

Wet mixed forest or thickets, sometimes in *Manicaria* swamps, at or near sea level; Izabal. Mexico (Chiapas); British Honduras; Costa Rica; Panama; northeastern South America.

A shrub or small tree, sometimes 7 meters high with a trunk 12 cm. in diameter, the branchlets densely strigose; leaves on stout petioles 5-15 mm. long, narrowly obovate or oblanceolate-oblong, 8-20 cm. long, short-acuminate or obtuse and apiculate, acute or cuneate at the base, 3-plinerved with an additional pair of obscure nerves close to the margin, ciliate, when young scabrous above with bulbous-based hairs, deep green and glabrate in age, paler beneath, densely strigose on the nerves, the surface very densely stellate-hirsute; flowers few, sessile or nearly so; hypanthium campanulate, densely strigose, 8-9 mm. long; sepals rounded-ovate, 4-5 mm. long, villous within, the exterior teeth prolonged about 1.5 mm.; petals white or rose; style sparsely villous, 12 mm. long; fruits tinged with pink.

Called "wild guava" in British Honduras.

HETEROCENTRON Hooker & Arnott

Plants herbaceous or rarely suffrutescent below, erect or prostrate, pubescent or glabrate; leaves petiolate, small, membranaceous, penninerved, 3-nerved, or multiplinerved; flowers small or rather large, paniculate or rarely solitary, white, pink, or purple, 4-parted; hypanthium ovoid, campanulate, or hemispheric; sepals triangular-acute, about equaling the hypanthium; petals ovate or obovate, obtuse, subretuse, or apiculate; stamens 8, dimorphic, the filaments glabrous; anthers dissimilar, incurved, linear-oblong or subulate, opening by a single apical pore, the cells undulate; connective of the larger anthers long-produced below the cells, straight or arcuate, the appendage elongate, clavate and bifid at the apex; connective of the smaller anthers very shortly produced, simple or bituberculate at the base; ovary free almost to the base, 8-costate, 4-celled, glabrous or setose or 4-denticulate at the apex; style slender, the stigma punctiform; fruit capsular, equaling the calyx tube, 4-valvate; seeds cochleate.

Species about 8, in Mexico and Central America. Only the following are known from Central America. *Heeria* Schlecht. 1839, *non* Meissn. 1837, is a generic synonym.

Flowers in cymose panicles. *H. subtripplinervium*.

Flowers solitary.

Hypanthium with appressed strigose hairs or nearly glabrous in age.

Leaves less than 2 cm. long, 3-nerved; calyx mostly less than 6 mm. long.

H. hirtellum.

Leaves more than 2 cm. long (3–11 cm.), mostly quinqueplinerved; calyx lobes mostly 8–10 mm. long. *H. suffruticosum*.

Hypanthium with spreading gland-tipped pilose hairs. *H. elegans*.

Heterocentron elegans (Schlecht.) Kuntze, Rev. Gen. Pl. 1: 247. 1891. *Rhexia elegans* Schlecht. Linnaea 13: 432. 1839. *H. sessilis* Gleason, Bull. Torr. Bot. Club 65: 573. 1938 (type, Alta Verapaz, *Tuerckheim* II.1554). *Monochaetum guatemalense* Standl. & Steyermark. Field Mus. Bot. 23: 136. 1944 (type from Huehuetenango, *Steyermark* 48512).

Weak suffruticose subshrubs. Alta Verapaz; Huehuetenango; San Marcos. Southern Mexico.

Small repent subshrubs with slender, sparsely hispid stems either rounded or obscurely angulate. Leaves ovate or ovate-oblong, crenate, sparsely strigose to almost glabrous, 5–25 mm. long and 2–12 mm. broad, acute; petiole slender, 1–4 mm. long, strigose. Inflorescence 1-flowered, terminal on branches, peduncle up to 30 mm. long, slender, strigose to nearly glabrous; hypanthium 4–6 mm. long, campanulate, with pilose spreading or reflexed gland-tipped hairs much thickened at the base; calyx lobes lanceolate to triangular-lanceolate, acute or acuminate, ciliate, 3–5 mm. long; petals ovate or cuneate obovate, obtuse, about 10 mm. long.

Heterocentron hirtellum (Cogn.) L. Wms. Fieldiana, Bot. 29: 567. 1963. *Arthrostemma hirtellum* Cogn. in Donn.-Sm. Bot. Gaz. 20: 286. 1895 (type, Dept. Quiché, *Heyde & Lux* 3328).

Known only from the locality cited above.

A decumbent or suberect sarmentose, perennial herb, the stems dark reddish brown, obscurely tetragonous, thinly strigose especially on the angles; leaves ovate or oblong-ovate, 1.2–2.5 cm. long and 0.8–1.5 cm. broad, acute to somewhat obtuse, broadly acute to rounded at the base, 3-nerved, obscurely crenate-serrate, strigose on both surfaces, borne on slender petioles; flowers few, solitary, terminating lateral branchlets, the peduncles 2–3 cm. long, glabrous; hypanthium 4 mm. long, hirsute with spreading or subreflexed hairs, these thickened at the base; sepals erect or ascending, triangular-lanceolate, acuminate, minutely ciliate, glabrous; petals reddish purple, about 1 cm. long; hypanthium setose or glandular-setose, somewhat tuberculate with age.

This species is closely allied to *H. elegans* (Schlecht.) Kuntze and may prove to be that species.

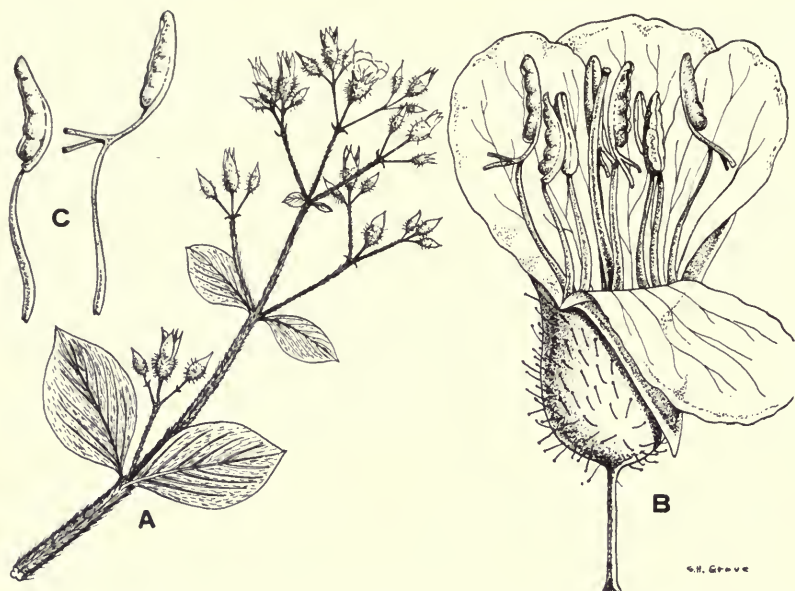


FIG. 70. *Heterocentron subtripplinervium*. A, Habit; slightly reduced. B, Flower, partly dissected; $\times 5$. C, Stamens of two types; $\times 7$.

Heterocentron subtripplinervium (Link & Otto) A. Braun & Bouché, Ind. Sem. Hort. Berol. app. 1851; Linnaea 25: 300. 1851; L. Wms. Fieldiana, Bot. 29: 567. 1963. *Melastoma subtripplinervium* Link & Otto, Ic. Pl. Rar. t. 24. 1821. *H. axillare* Naudin, Ann. Sci. Nat. ser. 3, 14: 155. 1850. *H. macrostachyum* Naudin, l.c. *H. mexicanum* Hook. & Arn. Bot. Beech. Voy. 290. 1840; Hook. Bot. Mag. 86: t. 5166. 1860. *H. roseum* A. Braun & Bouché, l.c. 299. *H. glandulosum* Schrenck in Regel, Gartenfl. 1856: 227, t. 169. 1856. *Heeria rosea* Triana, Trans. Linn. Soc. Bot. 28: 34. 1871. *Heeria macrostachya* Triana, l.c. 37. *Heeria axillaris* Cogn. in DC. Monog. Phan. 7: 138. 1891. *H. salvadoranum* Gleason, Bull. Torr. Bot. Club 65: 575. 1938. *H. hondurensense* Gleason, Phytologia 3: 360. 1950. *Nigua*; *nitro*; *nitro dulce*; *nitro real*; *nitro colorado*; *jazmín de peña*.

A widespread and variable species found from Mexico through Central America to Panama. Naturalized in Hawaii. Mountain thickets or moist banks or more commonly in oak-pine woodlands, 1,100–2,500 meters; Huehuetenango; Quiché; Quezaltenango; Sololá; Alta Verapaz; Baja Verapaz; Chimaltenango; Guatemala; Progreso; Jalapa; Chiquimula; Santa Rosa; Jutiapa; probably in other highland departments.

Erect or ascending perennial herbs or suffruticose herbs to 2 meters tall, sparsely branched, the stems tetragonous, brown or reddish strigose; leaves elliptic-oblong to rhombic-ovate, acute or obtuse, 3–10 cm. long, decurrent at the base into a petiole, 11–15-triplinerved, thin, entire, setulose-strigose on both surfaces, thinly to densely so, slightly paler beneath; inflorescence a cymose panicle, the pedicels sparsely (sometimes nearly glabrous) to densely pilose-hirsute, the short spreading or appressed hairs eglandular or variously glandular; hypanthium 3–5 mm. long, glabrous to densely pilose-hirsute, the hairs glandular or not, often tuberculate in age; sepals 4, lanceolate to triangular-lanceolate, acute or acuminate, 3–5 mm. long, glabrous or ciliate or rarely sparsely hirsute; petals 5–10 mm. long, obovate, white, pink or purple, rarely ciliate; ovary usually with 4 scales at the apex, the scales entire or emarginate, eciliate, ciliate or glandular-ciliate.

A characteristic plant of the pine-oak forests of the Guatemalan highlands.

Heterocentron suffruticosum Brandegee, Univ. Calif. Publ. Bot. 6: 57. 1914.

Open pine forest, 2,000–2,500 meters; San Marcos. Mexico (Chiapas), the type from Cerro del Boquerón.

An erect or decumbent, perennial herb, the roots tuberiferous, the stems tetragonous, often dark red, when young strigose with short stout hairs; leaves on rather long, slender petioles, 3–11 mm. long, thin, very broadly ovate or almost orbicular, 1.5–3 cm. long, 1.1–2.8 cm. broad, rounded or very obtuse at the apex, 3–7-plinerved, sparsely strigose on both surfaces, abruptly contracted and decurrent at the base; flowers axillary, solitary, long-pedunculate, the peduncles as much as 3 cm. long; hypanthium narrow, strigose with eglandular hairs, the sepals linear-lanceolate, attenuate, longer than the tube; petals pink or purple, 14 mm. long; ovary setose at the apex; anthers about 5 mm. long; hypanthium in fruit 7–8 mm. long, the sepals widely spreading, of about the same length.

LEANDRA Raddi

Shrubs or small trees, almost always pubescent, often hirsute or hispid; branches usually terete; leaves mostly large and petiolate, those of a pair equal or nearly so, entire or serrulate, 3–9-nerved or -plinerved; flowers small, 4–8-parted, generally in terminal panicles, mostly white; hypanthium globose to campanulate or tubular, often constricted at the mouth; sepals small, the exterior teeth tuberculiform to subulate; petals linear-lanceolate to ovate, acute or acuminate, usually erect in anthesis; stamens isomorphic or nearly so, the filaments slender, glabrous, the anthers linear or oblong, rarely subulate; connective of the anther simple or minutely prolonged, often gibbous or tuberculate on the back near the base; ovary wholly or partly inferior, the cells generally as many as the petals; style slender, the stigma punctiform or capitate; fruit small, baccate; seeds small, numerous.

Species about 200, mostly in South America. A few additional species are found in southern Central America. There is no satis-

factory way to distinguish this genus from *Miconia*, and in fact there are species of *Miconia* which are almost impossible to tell from some of these *Leandras*. On the other hand it is closely allied to *Clidemia*.

Leaves acute or abruptly long-decurrent at the base. *L. multiplinervis*.

Leaves subcordate, rounded, or very obtuse at the base.

Branches of the inflorescence elongate, somewhat recurved, the flowers secund.

Pubescence of the branches and hypanthium mostly of gland-tipped hairs.

L. mexicana.

Pubescence of the branches and hypanthium of eglandular hairs.

L. dichotoma.

Branches of the inflorescence short, ascending or spreading, the flowers not secund.

Leaves sparsely or rather densely hispid beneath with long stiff simple hairs, also stellate-tomentulose on the nerves. *L. melanodesma*.

Leaves densely stellate-tomentulose beneath, at least on the nerves, often also somewhat hispid near the bases of the nerves with plumose hairs.

L. subseriata.

Leandra dichotoma (D. Don) Cogn. in Mart. Fl. Bras. 14, pt. 4: 200. 1886. *Clidemia dichotoma* D. Don, Mem. Wern. Soc. 4: 307. 1823.

Wet mixed forest, 350 meters or less; Alta Verapaz; Izabal. British Honduras, along the Atlantic coast to Panama; tropical South America.

A slender shrub of 3–4.5 meters, the branches densely hispid or hirsute with rather stiff, brownish, spreading, eglandular hairs; leaves on petioles 2–6 cm. long, thin, ovate or elliptic-ovate, mostly 12–20 cm. long and 7–11 cm. broad, long-acuminate, rounded or broadly rounded at the base, 7–9-nerved, densely hirsute or villous-hirsute on both surfaces, the hairs longer beneath, paler beneath; panicles large, pyramidal, mostly 10–25 cm. long, laxly branched, densely brownish-hirsute, the branches elongate, usually curved, the flowers secund, most of them soon deciduous; hypanthium and calyx densely hirsute, the hairs usually red or bright red, the hypanthium 2.5 mm. long; outer calyx teeth less than half as long as the hypanthium, scarcely 1 mm. long; petals pink, lance-acuminate, 2.5–3 mm. long; ovary 5-celled, very shortly glandular-setulose; style 4 mm. long; fruit globose, 4–5 mm. in diameter, purple-black.

Leandra melanodesma (Naudin) Cogn. in Mart. Fl. Bras. 14, pt. 4: 73. 1886. *Clidemia melanodesma* Naudin, Ann. Sci. Nat. ser. 3, 17: 353. 1852.

Moist or wet, mixed forest, sometimes in second growth, 1,800–2,500 meters; Guatemala; Quiché; Quezaltenango; Huehuetenango. Southern Mexico; Costa Rica; Colombia; Ecuador.

A slender shrub or small tree of 1.5–4.5 meters, the young branches, petioles, and panicles densely furfuraceous-puberulent with stellate hairs and usually

sparsely short-setose; leaves on slender petioles 1–4 cm. long, ovate or oblong-ovate, 8–15 cm. long, 4–8 cm. broad, acuminate or long-acuminate, very obtuse or rounded at the base and often emarginate, obscurely denticulate, green above, thinly scabrous-setulose or glabrate, the veins often impressed, somewhat paler beneath, sparsely or densely hirsute or setulose with mostly simple, often undulate hairs, 5–7-plinerved; panicles mostly small and dense, many-flowered, 10 cm. long or shorter, the flowers subsessile; hypanthium 2.5–3 mm. long; exterior calyx teeth scarcely 0.5 mm. long; petals white or pinkish, lanceolate, 2.5–3 mm. long; style 4–5 mm. long; ovary short-setulose at the apex; fruit globose, 3–4 mm. in diameter, dark purple.

Most of the available Guatemalan collections have been made on the upper slopes of Volcán de Pacaya.

Leandra mexicana (Naudin) Cogn. in Mart. Fl. Bras. 14, pt. 4: 77. 1886. *Clidemiastrum mexicanum* Naudin, Ann. Sci. Nat. ser. 3, 18: 87. 1852.

Wet thickets or mixed forest, 350 meters or less; Petén; Alta Verapaz; Izabal. Southern Mexico; British Honduras; Honduras; Costa Rica; Panama; Colombia.

A shrub or small tree 1.5–4.5 meters high, the branches slender, densely pubescent with eglandular hairs and glandular-hirsute; leaves thin and soft, on slender petioles 2–6 cm. long, ovate, 12–20 cm. long, 4–15 cm. broad, acuminate, shallowly cordate at the broad base, 7-nerved, usually densely velutinous-pilose on both surfaces with mostly eglandular hairs; panicles laxly branched, mostly 6–10 cm. long, glandular-pilose, the branches elongate and recurved; flowers 7-parted, sessile, secund, most of them soon deciduous; hypanthium broadly tubular, 3–3.5 mm. long, densely short-pilose and glandular-pubescent; sepals round-ovate, 1.3 mm. long, the exterior teeth triangular, slightly exceeding the sepals; petals ovate, acute, 3 mm. long, pink; ovary 7-celled, pubescent at the apex; style 5 mm. long; fruit dark purple.

Leandra multiplinervis (Naudin) Cogn. in Mart. Fl. Bras. 14, pt. 4: 180. 1886. *Clidemia multiplinervis* Naudin, Ann. Sci. Nat. ser. 3, 17: 358. 1852.

Dense wet mixed forest or thickets, 1,300–2,300 meters; Alta Verapaz; El Progreso (Sierra de las Minas). Southern Mexico; Honduras; reported from Brazil.

A stout shrub of 1–3 meters, the young branches densely hispidulous with usually red, rather stiff, spreading or reflexed hairs; leaves petiolate, rather thick, ovate-oblong or oblong-lanceolate, mostly 10–20 cm. long and 4–10 cm. broad, long-acuminate, acute at the base and rather abruptly contracted and long-decurrent upon the petiole, 5-plinerved, the uppermost nerves arising far above the others, undulate-crenulate, scabrous and very rough above, paler beneath, hirtellous on the nerves and veins; panicles mostly small, few-many-flowered, mostly 3–10 cm. long, the flowers subsessile or on stout pedicels; hypanthium thinly

setulose with eglandular hairs, often red, 4 mm. long; outer calyx teeth equaling the hypanthium; ovary setulose at the apex; petals white or pink, triangular-subulate, 4 mm. long; style 6-8 mm. long.

A very common shrub in the mountains of Alta Verapaz and in central Honduras.

Leandra subseriata (Naudin) Cogn. in Mart. Fl. Bras. 14, pt. 4: 73. 1886. *Clidemia subseriata* Naudin, Ann. Sci. Nat. ser. 3, 17: 354. 1852. *Zapotillo* (Chimaltenango).

Dense, moist or wet, mixed or oak-pine forest, or in thickets, 1,000-3,000 meters; Alta Verapaz; Baja Verapaz; Jalapa; Santa Rosa; Sacatepéquez; Chimaltenango; Sololá; Suchitepéquez; Quezaltenango; San Marcos; Huehuetenango. El Salvador; Honduras; Costa Rica; Panama; southward to Ecuador.

A shrub or small tree 1.5-6 meters high, the young branches very densely and closely stellate-tomentose and often sparsely hirtellous; leaves on slender petioles 1.5-4 cm. long, oblong-ovate, mostly 8-17 cm. long, acuminate, rounded at the base and often emarginate, mostly 7-nerved or somewhat 7-plinerved, sparsely short-setulose above and often sparsely and minutely stellate-puberulent, rather rough to the touch, paler beneath, finely stellate-tomentulose beneath or in age glabrate except on the nerves; panicles many-flowered, rather narrow, usually 5-8 cm. long, the branches short, the flowers sessile, not secund; hypanthium 2 mm. long, densely stellate-tomentulose; outer calyx teeth very short, acute; petals white, acute, triangular-lanceolate, 2.5 mm. long; anthers yellow; style 4 mm. long; fruit globose, dark blue or purple.

A common shrub in mountain forests. Cogniaux apparently did not understand the differences between this and *L. melanodesma* and referred to the latter some collections of *L. subseriata*. One of these (*J. D. Smith* 2210 from San Rafael, Sacatepéquez) he reported as *L. melanodesma* var. *sagittata* (Naudin) Cogn., a form having small auriculiform lobes at the base of the leaf blade. In the collection cited these lobes, if such they are, appear to be the result of insect action.

There has been reported from British Honduras *L. costaricensis* Cogn. on the basis of *Schipp* 471, collected near Middlesex. This collection is not considered by Gleason in his account of the melastomes of the Maya region. The material is in fruit and not certainly referable to *Leandra*, although probably it belongs there. It is closely related to *L. subseriata* and, in fact, it is questionable whether *L. costaricensis* is really distinct.

The difficulties in distinguishing some of the species and genera of the Miconeae is exemplified here. Specimens of *Leandra sub-*



FIG. 71. *Leandra subseriata*. A, Habit; $\times \frac{1}{2}$. B, Detail of inflorescence; $\times 1$. C, Hypanthium and calyx; $\times 7\frac{1}{2}$. D, Petals from same flower; $\times 5$. E, Emarginate tip of sepal and appendage; much enlarged. F, Stamen; $\times 5$.

seriata have been determined as *Miconia guatemalensis* by no less authorities than Donnell-Smith, Standley, and Gleason and have been looked at by many botanists without comment. The two species are, in fact, very similar although placed in different genera traditionally.

MERIANIA Swartz

Trees or shrubs, glabrous or pubescent; leaves usually long-petiolate, oblong-lanceolate, 3-5-nerved, mostly entire; flowers 5-parted, usually large and showy, paniculate or cymose, white, pink, or purple; hypanthium glabrous or pulverulent, short-campanulate or hemispheric; calyx dilated and simple, truncate, or double, with the outer teeth short or elongate; petals obovate, rounded or apiculate at the apex, sometimes retuse; stamens 10, equal or somewhat unequal, the filaments filiform or linear and complanate; anthers linear-subulate, straight or somewhat outcurved, rostrate, opening by a single pore, the cells sometimes flexuous; connective of the anther not at all or very shortly produced below the cells, unap-

pendaged anteriorly, posteriorly usually prolonged into an obtuse or acute horn, not appendaged above the base or often bearing dorsally a linear ascending appendage parallel with the anther; ovary subglobose, free or adherent only at the base, 3–5-celled, glabrous, the carpels often bifid at the apex; style filiform, the stigma punctiform; capsule subglobose, included in the persistent calyx, generally umbilicate, loculicidally 3–5-valvate; seeds narrowly oblong-pyramidal.

Species about 40, mainly in tropical South America and the Antilles. Only this and one other are known from continental North America.

Meriania macrophylla (Benth.) Triana, Trans. Linn. Soc. Bot. 28: 66. 1871. *Davya macrophylla* Benth. Pl. Hartweg. 75. 1841.

Known in Guatemala only from the type, Rancho Palo Hueco (Quezaltenango), *Hartweg* without number. Panama; Andes of South America.

A tree of 9–12 meters; leaves on petioles 5–10 cm. long, broadly oval-elliptic, 18–33 cm. long, 12–22 cm. broad, obtuse or retuse and mucronate, shallowly cordate and short-peltate at the base, 7-nerved, lustrous above, coriaceous, pulverulent-floccose beneath; panicles broadly pyramidal, 20 cm. long, many-flowered, the pedicels fasciculate, 5–10 mm. long, furfuraceous; hypanthium subhemispheric, ecostate, barely puberulent, 7–8 mm. long; petals purple, obovate-oblong, 1.5 cm. long; anthers minutely appendaged at the base and prolonged into a very long, acuminate spur; capsule broadly subglobose, 8 mm. in diameter.

The occurrence of this plant in Guatemala is unusual, to say the least. Benthham states that a single specimen of it was collected, and no collector other than Hartweg has ever found any representative of the genus in Central America. If Cogniaux was correct in referring to the species material from Venezuela, Colombia, and Bolivia, the occurrence and distribution of the plant are still more remarkable, since the range is not one that would be expected in this family, at least in the case of a tree that evidently is rare in Guatemala—if it exists there at all. Until new material of the species is collected in Guatemala, its existence there is to be doubted. It is possible that Hartweg found the specimen in Ecuador, where he made extensive collections.

MICONIA Ruiz & Pavón

Reference: Alfred Cogniaux in DC. Monog. Phan. 7: 725–938. 1891.

Shrubs or trees; leaves usually petiolate, sometimes sessile, entire or denticulate, membranaceous to coriaceous, those of a pair sometimes unequal, variously

pubescent; flowers 4-8-parted, usually 5-parted, mostly small, the inflorescence terminal or rarely lateral, usually paniculate, the flowers sessile or short-pedicellate, generally white; hypanthium tubular to urceolate; calyx tube usually well developed but short, the sepals obsolete or present, variable in shape and size, the exterior teeth commonly minute, rarely exceeding the sepals; petals often inequilateral, mostly retuse and flabellate-veined; stamens all perfect, isomorphic or dimorphic, the filaments slender or complanate; anthers subulate, linear, oblong, obovate, or obovoid, 2-celled or 4-celled, opening by 1-2 pores or by 1-2 longitudinal slits; connective simple or variously prolonged or appendaged at base; ovary wholly or partly inferior, 2-several-celled, the ovules usually numerous; style straight or declinate, commonly elongate; stigma punctiform, truncate, capitate, or peltate; fruit baccate, often or usually edible.

A vast genus with about 900 species, in tropical America; the largest genus of the family. It is well represented in Guatemala and other parts of Central America, the plants being found at all elevations except the highest, but they are most plentiful in the wet forests at low or middle altitudes. Considering the great number of recognized species and their great variation in almost every character, they usually are well marked and exhibit relatively little variation. The key here provided for separation of the species, based in part upon that of Gleason in his account of the melastomes of the Maya region, is purely artificial. By monographers the species are arranged in sections, upon the basis of stamen characters. These characters often are somewhat difficult of determination, often suspiciously variable, and it is easy to make mistakes in their description. It is probable that foliage characters provide a much more trustworthy and certainly a much more practical means of segregating the many species. The wood in this genus is dull brownish, sometimes with a tinge of red, hard and heavy to moderately so, of fine or medium texture, mostly straight-grained, easy to work, not durable in contact with the soil. Because of its small size it is not used unless for firewood or poles.

Leaves green and glabrous beneath, at least when fully developed, often minutely stellate-furfuraceous on the nerves and veins, especially when young, rarely sparsely hirsute with simple hairs on the nerves. *Group A.*

Leaves permanently pubescent, tomentose, or lepidote beneath, the indument very rarely so minute that the surface may appear glabrous to the naked eye.

Pubescence of straight or curved, unbranched hairs. *Group B.*

Pubescence of loose stellate hairs or small peltate scales, these not sufficiently dense to conceal the actual surface of the leaf. *Group C.*

Pubescence of densely matted hairs or scales, these forming a close covering that completely conceals the actual surface of the leaf, the under side of the leaf therefore white, silvery, grayish, golden, or brown. *Group D.*

GROUP A

Leaves 3-5-nerved.

Branches acutely tetragonous.....*M. reducens*.

Branches terete or obtusely tetragonous.

Flowers conspicuously secund, subtended by minute persistent bracts; petioles usually hirsute; leaves conspicuously ciliate, often hirsute beneath on the nerves.

Leaves purple or wine-red beneath.....*M. oinochrophylla*.

Leaves green beneath.

Calyx conspicuously lobate.....*M. Schippii*.

Calyx truncate or nearly so.....*M. ciliata*.

Flowers not secund; petioles not hirsute; leaves not at all or very obscurely ciliate, not hirsute beneath on the nerves.

Hypanthium glabrous or rarely with a very few minute scattered trichomes.

Branches of the inflorescence conspicuously furfuraceous; leaves conspicuously reticulate-veined.....*M. purulensis*.

Branches of the inflorescence glabrous or practically so; leaves not evidently reticulate-veined.

Outer calyx teeth subulate, conspicuous; inflorescence few-flowered.
M. lateriflora.

Outer calyx teeth minute or none; inflorescence many-flowered.

Leaf blades broadly rounded at the base, usually blackening or at least darkening when dried.....*M. borealis*.

Leaf blades acute or subobtuse at the base, bright green or yellowish green when dried.....*M. glaberrima*.

Hypanthium minutely stellate-pubescent.

Leaves rounded at the base or very obtuse, sometimes emarginate.

Leaves mostly 12-30 cm. broad.....*M. calvescens*.

Leaves mostly 3.5-8 cm. broad.

Leaves punctate beneath between the veins; anthers scarcely 2 mm. long.....*M. hemenostigma*.

Leaves not punctate beneath; anthers 3-3.5 mm. long..*M. laevigata*.

Leaves acute or subacute at the base.

Inflorescences small, racemiform or with few-flowered racemiform branches.....*M. ochroleuca*.

Inflorescences large, many-flowered, repeatedly branched.

Leaves mostly 2.5-4 cm. broad, narrowly oblong-lanceolate; calyx and hypanthium 1.5-2 mm. long.....*M. virescens*.

Leaves mostly 4-8 cm. broad, broadly oblong-lanceolate; calyx and hypanthium about 3 mm. long.....*M. hyperprasina*.

Leaves 3-5-plinerved.

Branches of the inflorescence conspicuously secund.....*M. trinervia*.

Branches of the inflorescence not secund.

Petals 9-12 mm. long or more, either 5 or 6.

Hypanthium and inflorescence furfuraceous; petals usually 6.

Appendages of calyx about 3 mm. long; pubescence scale-like.

M. Lundelliana.

Appendages inconspicuous; pubescence not scale-like.....*M. Schlimii*.

Hypanthium and inflorescence glabrous; petals 5. *M. Zemurrayana*.
 Petals 5 mm. long or shorter, usually or always 5.

Leaf blades long-decurrent on the petiole, petiole winged above.

Sepals depressed-semiorbicular.

Leaves 5-plinerved. *M. prasina*.

Leaves 3-plinerved. *M. Schlechtendalii*.

Sepals acutely triangular.

Stigma truncate, no wider than the style. *M. prasina*.

Stigma capitate, conspicuously wider than the style. *M. obovalis*.

Leaf blades abruptly contracted into the petiole, not decurrent, the petioles not at all winged.

Leaves mostly verticillate; panicle branches 4-6 at each of the principal nodes. *M. longifolia*.

Leaves opposite; panicle branches chiefly opposite, sometimes accompanied by a pair of much reduced branches.

Branches of the inflorescence stellate-furfuraceous.

Leaf blades rounded and usually subcordate at the base.

M. Chamissois.

Leaf blades acute or subacute at the base.

Anthers 1-1.5 mm. long; style 2 mm. long. *M. alpestris*.

Anthers 2 mm. long or more; style 4 mm. long or slightly longer.

M. flaviflora.

Branches of the inflorescence glabrous or essentially so.

Leaves conspicuously barbate or stellate-pubescent beneath near the base in the axils of the primary nerves.

Leaves mostly 10-18 cm. long, the nerves arising little above the base of the blade. *M. mexicana*.

Leaves mostly 4-7 (10) cm. long, the nerves arising high above the base of the blade. *M. humilis*.

Leaves not barbate or stellate-pubescent beneath in the axils of the principal nerves.

Leaves conspicuously 5-plinerved, the outer nerves not very close to the margin, the blades mostly 6-12 cm. broad.

M. silvestris.

Leaves 3-plinerved, the outer nerves, if any, obscure and very close to the margin, the blades often much narrower.

Anthers about 5 mm. long. *M. hondurensis*.

Anthers 2 mm. long or shorter.

Hypanthium 3 mm. long. *M. Donnell-Smithii*.

Hypanthium 1.5 mm. long. *M. glaberrima*.

GROUP B

Leaves 3-7-plinerved.

Leaf blades rounded or very obtuse at the base, glabrous above or nearly so.

M. ibaguensis.

Leaf blades contracted and long-attenuate at the base, densely hirsute on the upper surface. *M. nervosa*.

Leaves 3-5-nerved.

Leaf blades acute at the base *M. Matthaei*.

Leaf blades rounded or very obtuse at the base.

Branches glabrous except at the nodes *M. Schippii*.

Branches densely hirsute.

Pubescence of the branches of deflexed paleaceous hairs . . . *M. platyphylla*.

Pubescence of the branches of very long, slender, spreading hairs.
M. lacera.

GROUP C

Leaves sessile or essentially so, sometimes short-petiolate but the petiole broadly winged to the base.

Leaves 3-nerved *M. impetiolaris*.

Leaves 3-plinerved, the inner nerves arising 5-10 cm. above the base of the blade.

Leaf blades broadest above the middle, broadly clasping at the base.
M. amplexans.

Leaf blades broadest below the middle, narrowed to a narrow base.
M. tomentosa.

Leaves conspicuously petiolate.

Leaves 3-5-plinerved.

Petals 6, about 10 mm. long.

Appendages of calyx about 3 mm. long; pubescence scale-like.
M. Lundelliana.

Appendages of calyx inconspicuous; pubescence not scale-like . . . *M. Schlunii*.

Petals 5, about 4 mm. long.

Hypanthium bearing sparse minute sessile stellate hairs *M. nutans*.

Hypanthium very densely setose-hirsute, the hairs stellately branched to the apex.

Leaves 3-plinerved, scaberulous on the upper surface *M. tixixensis*.

Leaves 5-plinerved, setose-hirsute on the upper surface . . . *M. echinoidea*.

Leaves 3-7-nerved.

Inflorescence of simple or branched spikes.

Inflorescence a simple spike; leaves glabrous on the upper surface.
M. triplinervis.

Inflorescence of panicle spikes.

Branches densely hirsute with long spreading hairs *M. aeruginosa*.

Branches densely stellate-puberulent, with few if any spreading hairs.
M. desmantha.

Inflorescence paniculate, the flowers mostly cymose, never spicate.

Branches bearing numerous long gland-tipped hairs *M. Tuerckheimii*.

Branches without gland-tipped hairs.

Branches densely long-hirsute with brownish hairs, these stellate at the apex *M. barbinervis*.

Branches finely stellate-pubescent or short-paleaceous.

Hypanthium glabrous *M. purulensis*.

Hypanthium densely stellate-pubescent *M. guatemalensis*.

GROUP D

Leaves 5-7-plinerved.

Leaves sessile or on thick petioles less than 1 cm. long. *M. involucrata*.

Leaves on elongate petioles.

Leaf blades elliptic to obovate, 6-14 cm. broad. *M. holosericea*.

Leaf blades lanceolate, 2-6 cm. broad.

Petals 5, about 4-4.5 mm. long; bracts subtending flowers almost as long as hypanthium. *M. oligocephala*.

Petals 4, about 2 mm. long; bracts none or inconspicuous. . . *M. fulrostellata*.

Leaves 3-5-nerved.

Lower surface of the leaves densely covered with brown or golden, peltate scales.

Leaves narrowly lanceolate, 2-4 cm. broad. *M. chrysophylla*.

Leaves oblong-obovate, 4-8 cm. broad or even wider. *M. punctata*.

Lower surface of the leaves densely and very minutely stellate-pubescent, not lepidote.

Petals 6-9 mm. long; flowers not secund.

Bracts minute or none. *M. serrulata*.

Bracts well developed, obovate, 5-8 mm. long, deciduous.

Hypanthium and calyx glabrous. *M. mirabilis*.

Hypanthium and calyx canescent-stellate. *M. dodecandra*.

Petals 2-5 mm. long; flowers often conspicuously secund on the branches of the panicle.

Leaves sessile or nearly so, auriculate at the base.

See *M. impetolaris*, *M. amplexans* and *M. tomentosa* in Group C.

Leaves petiolate, not auriculate at the base.

Leaf blades acute at the base. *M. elata*.

Leaf blades rounded or very obtuse at the base, sometimes emarginate.

Young branches strongly compressed and 2-edged. *M. argentea*.

Young branches not compressed, terete or tetragonous.

Flowers conspicuously secund on the branches of the panicle.

Young branches terete; petioles 1.5 cm. long or less. . . *M. albicans*.

Young branches tetragonous; petioles mostly 2-4 cm. long.
M. stenostachya.

Flowers not at all secund.

Leaves conspicuously denticulate, emarginate at the base.

M. serrulata.

Leaves entire or practically so, rounded or obtuse at the base,
not at all emarginate. *M. caudata*.

Miconia aeruginosa Naudin, Ann. Sci. Nat. ser. 3, 16: 135.
1851. *Cinco negritos* (San Marcos).

Moist or wet thickets or mixed forest, sometimes in open swamps,
500-1,500 meters; Alta Verapaz; Suchitepéquez; Quezaltenango; San
Marcos; Huehuetenango. Southern Mexico; Honduras to Panama;
Colombia and Venezuela.

A shrub or small tree 1.5–6 meters high, the young branches densely hirsute with stiff, spreading, brown or yellowish hairs; leaves membranaceous, on stout hirsute petioles 2–6 cm. long, broadly ovate to narrowly ovate, mostly 15–25 cm. long, long-acuminate, rounded or subcordate at the base, 5–7-nerved, unevenly dentate or denticulate, densely hirsute on both surfaces with setiform, usually yellowish, spreading hairs; panicles broadly pyramidal, mostly 15–20 cm. long, the branches spiciform, few or numerous, the spikes dense or interrupted, the rachis densely hirsute, the flowers sessile; calyx and hypanthium together 2–2.5 mm. long, very minutely stellate-puberulent; calyx obscurely lobate; petals white, broadly obovate, retuse, 1.5–2 mm. long; style 4 mm. long, the stigma truncate.

This is a frequent shrub in western Guatemala and in the mountains of Alta Verapaz, in the latter region often growing in pasture thickets.

Miconia albicans (Swartz) Triana, Trans. Linn. Soc. Bot. 28: 116. 1871. *Melastoma albicans* Swartz, Prodr. Veg. Ind. Occ. 70. 1788.

Mostly in dry or moist, open, pine forest, 800 meters or less; Izabal; Santa Rosa. Southern Mexico; British Honduras to El Salvador and Panama; West Indies; widely distributed in South America.

A stiff, erect shrub usually a meter high or less, sometimes 2 meters high, the branches stout, subterete, densely whitish-tomentose, with an appressed tomentum; leaves coriaceous, on stout petioles 1.5 cm. long or usually shorter, ovate-oblong or elliptic-oblong, mostly 7–15 cm. long and 3–6 cm. broad, obtuse or short-acuminate, rounded and emarginate or subcordate at the base, entire or nearly so, 5-nerved, glabrous above or nearly so except when young, lustrous, white or whitish beneath and very densely appressed-tomentose; flowers 5-parted, sessile and secund along the usually scorpioid branches of the small, generally dense panicle; hypanthium urceolate-campanulate, 2 mm. long, white-tomentose; sepals triangular, very short; petals white, obovate, 3 mm. long; anthers linear, 3 mm. long, opening by a rather large pore; style 4 mm. long, the stigma capitate.

Called "*cirín*," "*zarcil*," "*lengua de vaca*," and "*negrito*" in Honduras. The fruit in this as well as in most other species of *Miconia* is edible. At maturity it is usually black or bluish black, somewhat resembling a blueberry (*Vaccinium corymbosum*) in both appearance and flavor, although much inferior in size and taste.

Miconia alpestris Cogn. ex Donn.-Sm. Bot. Gaz. 20: 288. 1895.

Known in Guatemala only from the type, San Miguel Uspantán, Quiché, 2,250 meters, *Heyde & Lux* 3334. Mexico (Chiapas).

Branches obtusely tetragonous, the younger ones as well as the petioles, branches of the inflorescence and hypanthium densely stellate-furfuraceous; leaves rather thick, on slender petioles 2–5 cm. long, obovate-lanceolate, 12–17 cm. long, 4–7 cm. broad, subabruptly long-acuminate, broadly cuneate at the

base, 3-plinerved or almost 3-nerved, entire, furfuraceous above at first, soon glabrate, densely stellate-furfuraceous beneath on the nerves, elsewhere glabrate; flowers 5-parted, on very short pedicels, the panicles broadly pyramidal, many-flowered, 5–8 cm. long; hypanthium subhemispheric, 2 mm. long; sepals sub-obtuse, 0.5 mm. long; petals obovate, emarginate, 2 mm. long; anthers 1–1.5 mm. long, opening by pores; style 2 mm. long, truncate at the apex.

Miconia amplexans (Crueger) Cogn. in Mart. Fl. Bras. 14, pt. 4: 256. 1887. *Pogonorhynchus amplexans* Crueger, Linnaea 20: 107. 1847.

Wet mixed forest, at or little above sea level; Izabal (Entre Ríos, Standley 72699). British Honduras; Panama. Widely distributed in tropical South America.

A coarse shrub or tree 2.5–8 meters high, the young branches obtusely tetraginous, closely and densely brown-tomentose with stellate pubescence; leaves sessile, firm-membranaceous, very large, mostly 20–40 cm. long and 10–20 cm. broad, broadly obovate, rather abruptly acuminate or caudate-acuminate, often with a very long and narrow tip, narrowed below to a rounded or amplexical base, 3-plinerved, the nerves rising 5–10 cm. above the base, somewhat stellate-puberulent above when young but in age glabrous, sparsely or densely and finely stellate-pubescent beneath with mostly brownish hairs; inflorescence narrow, almost spike-like, 10–20 cm. long, many-flowered, closely stellate-pubescent; hypanthium narrowly campanulate, 5.5–6 mm. long, densely stellate-tomentulose; sepals 2 mm. long, the free portion semicircular; petals oblong-obovate, white, 7 mm. long; anthers slender-subulate, 6–8 mm. long; ovary almost free, glandular-pubescent; style 10 mm. long, glandular-pubescent below, the stigma truncate.

Schipp reports that the leaves are sometimes as much as 60 cm. long and almost 30 cm. broad.

Miconia argentea (Swartz) DC. Prodr. 3: 182. 1828. *Melastoma argentea* Swartz, Fl. Ind. Occ. 779. 1800 (type from Mosquito Coast of Nicaragua). *Jolte, tolte* (Petén, fide Lundell); *sirín cacal* (Chiquimula, fide Seler); *sirinón* (Izabal); *sirín*; *siril* (fide Aguilar).

Moist or wet thickets, most often on brushy hillsides or in ravines, sometimes in pine forest, 1,500 meters or less, mostly at 500 meters or lower; Petén; Alta Verapaz; Izabal; Chiquimula; Santa Rosa; Suchitepéquez; Retalhuleu; San Marcos. Southern Mexico; British Honduras to El Salvador and Panama.

A large shrub or small tree, sometimes 12 meters high with a trunk 30 cm. in diameter, the trunk short, the crown dense, rounded or spreading, the bark light brown or pinkish, with long, rather thick, smooth scales, the inner bark darker brown; young branchlets very stout, strongly compressed, whitish and densely and finely stellate-tomentulose; leaves chartaceous, large, on stout petioles 2–6 cm. long, broadly elliptic, mostly 12–23 cm. long and 7–13 cm. broad, often even

larger, abruptly short-acuminate, rounded or very obtuse at the base, entire or dentate, deep green and glabrous above, with impressed nerves, 5-nerved, white or whitish beneath and covered with a very dense, close, stellate tomentum; panicles much branched and many-flowered, 10–20 cm. long, open or dense, the flowers 5-parted, sessile; hypanthium cupular, 1.5 mm. long, stellate-tomentulose, the sepals minute, triangular; petals white, oblique-obovate, 2 mm. long; anthers linear, 2–2.3 mm. long, opening by a large terminal pore; style 4–4.5 mm. long; stigma capitate; fruits small, bluish black.

Called “maya,” “white maya,” “black maya,” and “white moir” (British Honduras); “*cenizo*” (Honduras); “*sirin macho*” (El Salvador); “*sabano*” (Tabasco); “*manzano*,” “*tesuate blanco*” (Oaxaca). The wood is sometimes used in southern Mexico for railroad ties, but its principal use is for fuel. In some parts of Central America, but especially about the Canal Zone, this is a very common shrub or tree, particularly in second growth. Its distribution in Guatemala is local and it is seldom abundant. The larger trees are conspicuous and rather handsome. When the foliage is disturbed by wind, the white under surfaces of the leaves are exposed and the trees appear from a short distance to be covered with masses of white blossoms.

Miconia barbinervis (Benth.) Triana, Trans. Linn. Soc. Bot. 28: 113. 1871. *Clidemia barbinervis* Benth. Bot. Voy. Sulph. 93. 1844.

Dense wet mixed forest, 150–350 meters; Huehuetenango; Alta Verapaz. Type from Nicaragua; Costa Rica; Panama. Widely distributed in tropical South America.

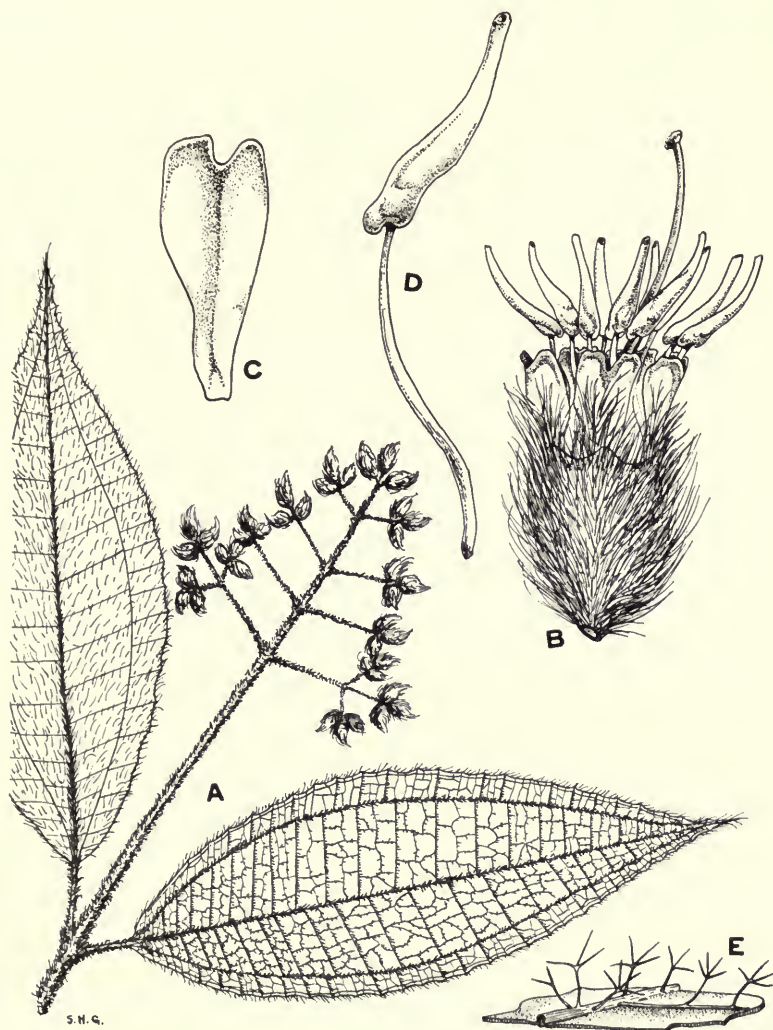
A stout shrub of 2–3 meters, the terete branches and the petioles densely hirsute with long spreading hairs, these stellate at the apex; leaves membranaceous, on stout petioles about 1 cm. long, narrowly elliptic-oblong, mostly 12–20 cm. long and 6–8 cm. broad, acuminate, cuneate at the base, 3–5-nerved, repand-dentate, often conspicuously so, densely hirsute on both surfaces, all or most of the hairs with stellately branched tips; panicles sparsely branched, usually 10 cm. long or less, the branches densely stellate-hirsute, the flowers sessile, glomerate at the ends of the branches; hypanthium 3–4 mm. long, densely stellate-hirsute; petals retuse, 3 mm. long, white; style 4–6 mm. long, strongly dilated at the apex; fruit 4 mm. in diameter.

This has been reported from Guatemala as *M. cuneata* Triana.

Miconia borealis Gleason, Bull. Torr. Bot. Club 55: 118. 1928.

Moist or wet thickets or mixed forest, 700 meters or less; Alta Verapaz; reported from Izabal; Escuintla. Southern Mexico; British Honduras, along the Atlantic coast to Panama; western Cuba.

A slender shrub or tree 1.5–11 meters high, glabrous throughout or practically so, the branches terete; leaves thick-membranaceous, often darkening when dried,



S. H. G.

FIG. 72. *Miconia barbinervis*. A, Habit; $\times \frac{1}{2}$. B, Flower; $\times 4$. C, Petal, $\times 7\frac{1}{2}$. D, Stamen; $\times 7\frac{1}{2}$. E, Pubescence of under side of leaf; much enlarged.

on slender petioles about 1 cm. long, lanceolate or oblong-lanceolate, mostly 8–10 cm. long and 2–2.5 cm. broad, narrowly long-acuminate, rounded at the base, 3-nerved and usually with obscure additional nerves at the margin, often lustrous; panicles open, many-flowered, much branched, broadly pyramidal, 5–10 cm. long, the branches 4-angulate, the flowers almost sessile, 5-parted; hypanthium broadly campanulate, 1.5 mm. long; sepals depressed-semicircular; anthers 2 mm. long; style clavate, truncate; petals very short, white; berries dark blue.

This is presumably the plant recorded from Guatemala by Hemsl. as *M. minutiflora* DC.

Miconia calvescens DC. Prodr. 3: 185. 1828. *Jortada* (Alta Verapaz); *sirín morado*.

Moist or wet thickets or dense mixed forest, 1,800 meters or less; Alta Verapaz; Izabal; Escuintla; Suchitepéquez; Retalhuleu; Quetzaltenango; San Marcos; Huehuetenango. British Honduras; Honduras; Costa Rica; Panama. Widely distributed in South America.

A large coarse shrub or a tree, often 6–12 meters high, with a trunk as much as 25 cm. in diameter, the young branches somewhat compressed, sparsely and minutely stellate-furfuraceous; leaves thick-membranaceous, on stout petioles 3–6 cm. long or more, broadly elliptic or oval to oblong-obovate, on fertile branches 15–35 cm. long and half as broad or broader, abruptly short-acuminate, rounded or very obtuse at the base, often shallowly cordate, 3-nerved or the lateral nerves often rising slightly above the base of the blade, entire or undulate, glabrous above or nearly so, obscurely stellate-furfuraceous beneath on the nerves or almost wholly glabrous, often bright purple or wine-red beneath; flowers densely aggregate, forming rather large, widely branched panicles; hypanthium campanulate, 2 mm. long, sparsely stellate-puberulent; calyx tube shortly prolonged, the sepals broadly triangular, 0.8 mm. long; petals white, obovate, 2.5–3 mm. long; anthers linear, 2–3.5 mm. long; ovary two-thirds inferior, 3-celled, glabrous; style 5–7 mm. long, glabrous, the stigma capitate.

This plant is remarkable for its very large and handsome leaves which often are deep purple or wine-red beneath, especially when young. They frequently attain a great size on sterile branches or on vigorous young plants, being sometimes as much as 70 cm. long and proportionately broad. The plant is a striking and decorative one, and very rarely it is seen in cultivation in Guatemala, in parks or about fincas. The leaves are among the largest produced by any dicotyledonous plant of Guatemala.

Miconia caudata (Bonpl.) DC. Prodr. 3: 187. 1828. *Melastoma caudata* Bonpl. in Humb. & Bonpl. Mélast. 13, t. 7. 1816. *Lochajá* (Cobán, Quecchí).

Moist or wet, mixed forest or pine forest, 1,200–1,450 meters; Alta Verapaz; Baja Verapaz. Mexico (Chiapas); Honduras; Costa Rica and Panama; Colombia.

A shrub or a small tree, the slender rigid branches subterete or obtusely tetragonous, covered with a minute close dense stellate ferruginous tomentum; leaves chartaceous, on slender petioles 3–5 cm. long, ovate or elliptic-ovate, mostly 15–25 cm. long and 7–15 cm. broad, gradually or abruptly caudate-acuminate, often terminated by a slender linear tip 2 cm. long or more, rounded or very obtuse at the base, 5-nerved, entire or practically so, very minutely stellate-

puberulent on the upper surface or practically glabrous, brownish beneath, sparsely to densely and minutely stellate-puberulent; panicles small or large, sometimes 15 cm. long but usually shorter, sparsely or much branched, stellate-tomentulose, many-flowered, the flowers mostly short-pedicellate; hypanthium 2.5 mm. long, stellate-tomentulose; sepals evident but very short; petals white, sparsely and minutely stellate-puberulent outside, 3 mm. long; style 7 mm. long, the stigma truncate; fruit bluish black, 4 mm. in diameter.

Miconia Chamissois Naudin, Ann. Sci. Nat. ser. 3, 16: 179. 1851.

Moist or wet thickets or mixed lowland forest, at or near sea level up to 800 meters; Izabal. Mexico; British Honduras; Honduras; Costa Rica; widely distributed in South America.

A shrub of 1-3 meters, the young branches slender, obtusely tetragonus, glabrous or nearly so; leaves on stout petioles 1 cm. long or shorter, membranaceous or thick-membranaceous, broadly oblong-ovate, 10-18 cm. long, 5-10 cm. broad, acuminate, broadly rounded at the base and often subauriculate, 3-pinnerved, entire or nearly so, deep green and glabrous above, slightly paler beneath, when young sparsely and very minutely stellate-puberulent, in age glabrous or nearly so; panicles pyramidal, 10-20 cm. long, sparsely and very minutely stellate-puberulent, the branches numerous, opposite or rarely with 1-2 short additional ones at the node, the flowers 5-parted; hypanthium campanulate, 2 mm. long, sparsely and minutely stellate-puberulent; sepals broadly depressed-triangular, 0.5 mm. long; petals obovate, white, 3.5 mm. long; anthers linear, 2.7-3.5 mm. long; ovary half inferior, 3-celled; style 6.5 mm. long, the stigma truncate; berries black.

The flowers in this species are often cleistogamous, especially in the second flowering of the year.

Miconia chrysophylla (L. Rich.) Urban, Symb. Antill. 4: 459. 1910. *Melastoma chrysophylla* L. Rich. Act. Soc. Hist. Nat. Paris 1792: 109. 1792. *Melastoma fulva* L. Rich. ex Humb. & Bonpl. Mélast. 23, t. 11. 1816. *Miconia fulva* DC. Prodr. 3: 180. 1828.

Moist or wet, mixed forest, about 350 meters; reported from Cubilgüitz, Alta Verapaz. Southern Mexico; British Honduras; Costa Rica and Panama; West Indies; South America.

A shrub or tree, sometimes 10 meters high with a trunk 30 cm. in diameter, the trunk round, the bark dark grayish brown, the inner bark very dark, grayish brown; young branchlets sharply tetragonus, densely brown-lepidote, soon glabrate; leaves on petioles 5-15 mm. long, opposite or verticillate, chartaceous, narrowly oblong to narrowly oblong-lanceolate, 10-20 cm. long, 2-4 cm. broad, narrowly long-acuminate, attenuate to the base, entire or nearly so, 3-nerved, glabrous and deep green above, the nerves impressed, reddish brown beneath, very densely covered with tightly appressed scales; panicles 10-20 cm. long, much branched, densely lepidote, the flowers sessile, 5-parted; hypanthium

broadly campanulate, 1.5 mm. long, densely lepidote; sepals reduced to minute projecting teeth on the short calyx tube; petals obovate, white, retuse, 2 mm. long; anthers oblong, 1.5 mm. long, opening by elongate slits; style stout, 3 mm. long, the stigma truncate.

Called "maya" or "red maya" in British Honduras; "*tesuate*" (Oaxaca). The wood is yellowish when first cut but soon darkens upon exposure to the air.

Miconia ciliata (L. Rich.) DC. Prodr. 3: 179. 1828. *Melastoma ciliata* L. Rich. Act. Soc. Hist. Nat. Paris 1792: 109. 1792.

Savannas or open lowland pine forest, at or little above sea level; reported from Petén; Alta Verapaz; Izabal. Southern Mexico; British Honduras; Panama; West Indies. Widely distributed in South America.

A shrub 1.5–2.5 meters high, the young branches terete or obtusely tetraginous, glabrous, the nodes usually sparsely hirsute near the apex or throughout; leaf blades oblong or lance-oblong, 7–17 cm. long, 3–7 cm. broad, acute or acuminate, obtuse or rounded at the base, 3-nerved with an additional obscure pair of marginal nerves, serrulate, ciliate, glabrous or often with a few scattered setiform hairs beneath on the costa; inflorescence thyrsiform-paniculate, 5–15 cm. long, the short branches spreading; flowers 5-parted, sessile, secund; hypanthium urceolate, glabrous, 2–2.5 mm. long; calyx tube erect, 1–1.5 mm. long, truncate; petals obovate-oblong, 3 mm. long, pink; anthers oblong, 1.5 mm. long; ovary inferior, the style 2 mm. long; fruit blue or bluish black.

Called "maya" in British Honduras.

Miconia desmantha Benth. Pl. Hartw. 181. 1845; L. Wms. Fieldiana, Bot. 29: 570. 1963. *M. Bourgaeana* Cogn. in DC. Monog. Phan. 7: 772. 1891. *M. Carioana* Cogn. l.c. 773 (type from Guatemala, Bernoulli & Cario 2668).

Moist or wet thickets and pastures or in ravines, 700–1,500 meters. Alta Verapaz; Quiché; Quezaltenango; San Marcos. Mexico through Central America and Panama; Colombia.

A shrub of 1–3 meters, the branches rather slender, obtusely tetraginous, densely furfuraceous-hirtellous with short ferruginous hairs and usually with a few longer spreading hairs; leaves thick-membranaceous, ovate, on stout petioles 1–2.5 cm. long, 15–25 cm. long, 10–15 cm. broad, or often smaller, rather narrowly acuminate, rounded and usually shallowly and narrowly cordate at the base, 7-nerved, denticulate, deep green above, thinly setose-hirsute, usually finely bullate, paler beneath, finely stellate-puberulent on the nerves and veins and sparsely setulose-hirsute, the veins elevated and very conspicuous; panicles equaling or shorter than the leaves, the branches rather few, spreading or ascending, spike-like, the flowers sessile, glomerate; hypanthium 2 mm. long, densely stellate-furfuraceous, the calyx subtruncate; petals white, broadly obovate, 2.5 mm. long; style 5–6 mm. long, truncate at the apex.



FIG. 73. *Miconia desmantha*. A, Habit; $\times \frac{1}{2}$. B, Flower, partially dissected; $\times 5$. C, Petal; $\times 7\frac{1}{2}$. D, Stamen; $\times 7\frac{1}{2}$.

Closely related to *Miconia aeruginosa* Naud. and some forms of the two are difficult to distinguish. The group needs critical study.

Miconia dodecandra (Desr.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 243. 1887. *Melastoma dodecandra* Desr. in Lam. Encycl. 4: 46. 1796.

Moist or wet, mixed forest or frequently in pine or oak forest, 1,500 meters or less; Alta Verapaz; Zacapa; Huehuetenango. Southern Mexico; British Honduras to Panama. West Indies; widely distributed in South America.

A large shrub or a tree, rarely 10 meters high with a trunk 20 cm. or more in diameter, the younger branches subterete, densely covered with a fine close fer-

ruginous stellate tomentum; leaves subcoriaceous, on stout petioles 2–4 cm. long, elliptic to oblong-ovate, 10–20 cm. long, 4–10 cm. broad, acuminate, rounded or very obtuse at the base, entire or nearly so, deep green and glabrous above, brownish beneath, covered with a very dense, fine, stellate tomentum; panicles rather narrow, many-flowered, 10–20 cm. long, stellate-tomentose, with 2 superposed branches at each node; bracts obovate, canescent-tomentulose outside, 5–8 mm. long, soon deciduous; flowers chiefly 6-parted, on long stout pedicels; hypanthium campanulate, 5 mm. long in anthesis, densely canescent-stellate; calyx tube 1 mm. long, the sepals triangular, short, irregular; petals narrowly obovate, 7–9 mm. long, white tinged with pink; anthers linear-subulate, 6–10 mm. long; ovary 4–5-celled, mostly superior; style 10–12 mm. long; fruit large, black.

Called “maya” in British Honduras.

Miconia Donnell-Smithii Cogn. ex Donn.-Sm. Enum. Pl. Guat. 3: 28. 1893, *nomen*; Bot. Gaz. 20: 287. 1895.

Dense, moist or wet, mixed forest, 1,500–1,800 meters; endemic; Alta Verapaz; Baja Verapaz; Huehuetenango; Quiché (type from San Miguel Uspantán, *Heyde & Lux* 3333).

A slender shrub or a small tree 4.5 meters high or less, glabrous throughout, the branches subterete; leaves on slender petioles 1 cm. long, firm-membranaceous, lanceolate, mostly 5–10 cm. long and 1.5–2.5 cm. broad, caudate-attenuate, attenuate at the base, 3-plinerved, the outer nerves rising far above the base of the blade, entire; panicles pyramidal, pedunculate, lax, many-flowered, 6–10 cm. long, the slender pedicels 4–7 mm. long; hypanthium globose-urceolate, 3 mm. long; sepals triangular, acute, erect, scarcely 1 mm. long, white furfuraceous along the margins; petals broad, 1.5 mm. long; anthers 1.5 mm. long; style 4–5 mm. long, truncate at the apex.

Miconia echinoidea Standl. & Steyer. Field Mus. Bot. 23: 180. 1944.

Quiché; Huehuetenango (type from vicinity of Maxbal, *Steyermark* 48831). Mexico (Chiapas).

A shrub of 1.5 meters, the slender branches terete, very densely hirsute-tomentose, the hairs spreading, setiform, pale yellow, stellately branched at the apex, the petioles and inflorescence covered with the same kind of pubescence, the older branches brown; leaves on rather stout petioles 1–4 cm. long, narrowly ovate or lance-ovate, 11–17 cm. long, 4–7.5 cm. broad, narrowly long-acuminate, rounded or obtuse at the base, 5-plinerved, the inner nerves arising well above the base of the blade, minutely serrulate or almost entire, very densely setose-hirsute with short, yellowish, somewhat spreading hairs, yellowish green beneath, stellate-tomentose with rather soft, dense, short-stipitate hairs; panicles small, erect, pedunculate, scarcely more than 4 cm. long, the branches short, stout, opposite, divaricate, the flowers 5-parted, densely aggregate at the ends of the branchlets; hypanthium campanulate, 2.5 mm. long, obtuse at the base, very densely covered

with short bristles, these pale yellowish, thickened below, stellately branched at the apex; calyx tube very shortly produced, the sepals ovate-rounded, setulose, the exterior lobes subulate or subulate-triangular, 1.6 mm. long, much longer than the sepals; petals white, glabrous, oval-obovate, 3.5–4 mm. long, reflexed, rounded or very obtuse at the apex; anthers unequal, subulate, the longer ones 3 mm. long; style rather stout, 7 mm. long, sparsely pilosulous near the base, the stigma punctiform.

Miconia elata (Swartz) DC. Prodr. 3: 182. 1828. *Melastoma elata* Swartz, Prodr. Veg. Ind. Occ. 70. 1788.

Wet forest, near sea level; British Honduras (Mullins River road, W. A. Schipp 150). Mexico; Costa Rica; Cuba and Jamaica.

A tree of 9 meters, the trunk 12 cm. in diameter, the young branches thick, acutely 4-angulate, finely and rather sparsely brown-tomentulose; leaves on very stout petioles 3–5 cm. long, coriaceous, ovate-lanceolate to elliptic, 10–30 cm. long, 5–15 cm. broad, abruptly acute or acuminate, cuneate at the base, entire or repand, glabrous above, the nerves and veins impressed, brownish beneath, densely covered with a minute close stellate tomentum, the nerves and veins strongly elevated; panicles sparsely branched, 10–15 cm. long, the branches stout, tetragonous, densely brown-tomentulose, the flowers sessile, 6-parted; hypanthium campanulate, 2 mm. long, minutely stellate-tomentulose; calyx tube erect, shortly prolonged, subtruncate, the sepals almost obsolete; petals rounded, 1.5 mm. long, white; anthers linear; style 2 mm. long; fruit 10-costate, 4–5 mm. thick.

This has been reported from British Honduras and Mexico as *Miconia astroplocama* Donn.-Sm.

Miconia flaviflora Gleason, Bull. Torr. Bot. Club 63: 534. 1936. *M. flaviflora* var. *emigrans* Gleason, Brittonia 2: 320. 1937.

Wet mixed forest, 250–350 meters; Alta Verapaz (Cubilgüitz; Candelaria). Costa Rica; Peru.

A large shrub or a tree as much as 8 meters high, the young branches obtusely tetragonous, rather densely and finely stellate-furfuraceous, brownish; leaves thick-membranaceous, on stout petioles 1.5–2.5 cm. long, oblong to obovate-oblong, mostly 16–24 cm. long and 4–9 cm. broad, shortly caudate-acuminate, cuneate at the base, 3-plinerved, entire or repand-denticulate, glabrous above, green beneath, very finely and rather sparsely stellate-lepidote, especially on the nerves; panicles 10–15 cm. long, much branched, rather open, many-flowered, the branches brown and minutely stellate-furfuraceous, the flowers 5-parted, sessile, cymulose; hypanthium campanulate, 2 mm. long, stellate-lepidote; calyx teeth triangular, 0.5 mm. long; petals narrowly oblong-obovate, white, 3.5 mm. long, very minutely puberulent outside; anthers thick, linear, the larger ones 2.8 mm. long; ovary inferior, 5-celled; style glabrous, the stigma subcapitate.

The Central American material is referable to var. *emigrans*.

Miconia fulvostellata L. Wms. Fieldiana, Bot. 29: 571. 1963.

Known from the type (Huehuetenango, *Steyermark* 49143a) and also from British Honduras.

Trees to 15 cm. in diameter, the branchlets densely fulvous stellate with stellate or barbellate trichomes. Leaves of a pair somewhat unequal in size, lanceolate or elliptic-lanceolate, acuminate, long petiolate, 3- (5) -plinerved, obscurely denticulate above, glabrous above or nearly so, densely fulvous stellate-tomentose below, blade 6-14 cm. long and 2-5.5 cm. broad; petiole slender, angled, 1-3 cm. long, densely stellate pubescent; inflorescence a terminal panicle shorter than the subtending leaves, the lateral branches short and the flowers racemose and sessile, pubescence as on the branchlets; flowers small, white; hypanthium about 1.5-2 mm. long and as broad or broader, broadly campanulate, densely fulvous stellate, the calyx very short, almost unlobed but with 4 short dorsal appendages about 0.5-1 mm. long and these acute or obtuse, fulvous stellate; petals 4, oblong or oblong quadrate, about 2 mm. long and 1.5 mm. broad, the apex obscurely bilobed and somewhat apiculate at one angle; stamens 8, the anthers about 1.5 mm. long and the filament 1 mm. long; style somewhat thickened above, about 3-3.5 mm. long; fruit not seen.

Called "mountain sirin" in British Honduras.

Miconia glaberrima (Schlecht.) Naudin, Ann. Sci. Nat. ser. 3, 16: 243. 1851. *Melastoma glaberrima* Schlecht. Linnaea 13: 421. 1839. *Uva* (Huehuetenango).

Moist or wet, mixed forest or sometimes in pine forest, 900-2,500 meters; Alta Verapaz; Zacapa; El Progreso; Quiché; Huehuetenango; Quezaltenango; San Marcos. Southern Mexico; El Salvador; Costa Rica; Panama.

A shrub or a small tree, sometimes 8 meters high, usually lower, glabrous throughout or nearly so, the branches slender, obtusely tetragonous; leaves membranaceous or often thick and firm, drying green or yellowish green, on petioles 1-3.5 cm. long, elliptic-oblong or lance-oblong, mostly 8-14 cm. long and 2.5-5 cm. broad, acuminate or long-acuminate, often abruptly so, mostly acute at the base, 3-nerved or with weak additional nerves close to the margin, the inner nerves sometimes arising slightly above the base of the blade but usually basal or nearly so, entire or essentially so; panicles pyramidal, mostly 5-7 cm. long, short-pedunculate, freely branched, many-flowered, the flowers mostly pedicellate; hypanthium hemispheric, glabrous, 1.5 mm. long, the sepals minute; petals white or rarely tinged with pink, 1 mm. long; style 1-3 mm. long; berries small, white or sometimes tinged with pink or purple.

Closely related to this and probably in no way distinct is *M. pinctorum* Naudin. In Guatemalan material referred here there are two easily separable forms, one with chiefly 3-nerved leaves, the other with 3-plinerved leaves. Ordinarily these are considered good specific differences, but there seems to be much variation in this respect,

and some of the forms are rather ambiguous. Both have been called *M. glaberrima* by Gleason.

Miconia guatemalensis Cogn. in Donn.-Sm. Bot. Gaz. 16: 5. 1891. *Acinodendrum guatemalense* Kuntze, Rev. Gen. 951. 1891. *Alumbre* (Huehuetenango).

Moist to wet, mixed forest or more often in moist or rather dry, pine and oak forest, sometimes on brushy, often rocky hillsides, or in pastures, 1,300–2,600 meters; Alta Verapaz (type from Tamahú, *Tuerckheim* 924); Baja Verapaz; Guatemala; Chiquimula; Jutiapa; Huehuetenango. Mexico (Chiapas); Honduras; El Salvador.

A slender shrub 1–2.5 meters high, usually about a meter high, rarely low and only 30 cm. high, the branches subterete or obtusely tetragonous, densely stellate-tomentose with mostly brownish hairs; leaves on slender petioles 1–6 cm. long, membranaceous, often rugose, ovate or broadly ovate, mostly 7–15 cm. long and 3.7–11 cm. broad, short-acuminate, broadly rounded or often subcordate at the base, 5-nerved, entire or denticulate, thinly or densely setulose-hirsute on the upper surface with simple hairs, closely and densely or sometimes rather sparsely stellate-puberulent or tomentulose beneath; panicles lax or dense, rather small, 4–8 cm. long, many-flowered, the flowers aggregate, the pedicels 1 mm. long or less; hypanthium suburceolate, 2 mm. long, stellate-pubescent, the sepals very short, broadly rounded; petals 3 mm. long, white or tinged outside with pink; style 4 mm. long; fruit juicy, purple-black or bluish-black.

Called "*sarcil*" and "*sirina*" in Honduras. In Huehuetenango the fruits are said to be used for dyeing leather. This plant has been reported from Guatemala as *M. globulifera* Naudin. Specimens of the superficially similar *Leandra subseriata* have often been referred here.

Miconia hemenostigma Naud. Ann. Sci. Nat. ser. 3, 16: 230. 1851. *Cinco negritos* (Huehuetenango).

Moist or wet, mixed forest, 2,200–3,200 meters; El Progreso; Huehuetenango; San Marcos. Southern Mexico.

A shrub or tree of 3–9 meters, the branches rather stout, like the petioles and panicles covered with a rather dense, brown, stellate-furfuraceous indument; leaves on slender petioles 2–5 cm. long, membranaceous to chartaceous, oblong, ovate-oblong, or narrowly elliptic-oblong, mostly 9–16 cm. long and 3.5–6 cm. broad, acuminate or caudate-acuminate, rounded or obtuse at the base, 3-plinerved or with an additional pair of inconspicuous nerves along the margin, minutely denticulate or entire, glabrous above, usually yellowish green when dried, often much paler and somewhat silvery beneath, stellate-furfuraceous on the nerves and veins and minutely and sparsely punctate or furfuraceous-lepidote between them but appearing glabrous; panicles pyramidal, mostly 8–12 cm. long, rather open, much-branched, many-flowered, the flowers sessile or pedicellate; hypan-

thium urceolate, 2 mm. long, minutely stellate-furfuraceous or almost glabrous, the sepals minute; petals white, 1.5 mm. long; anthers oblong, 2 mm. long; fruit pale blue.

Miconia holosericea (L.) DC. Prodr. 3: 181. 1828; L. Wms. Fieldiana, Bot. 29: 571. 1963. *Melastoma holosericea* L. Sp. Pl. 390. 1753. *Melastoma mucronata* Desr. in Lam. Encycl. 4: 46. 1796. *Miconia mucronata* Naudin, Ann. Sci. Nat. ser. 3, 16: 120. 1851.

Pine forest, at or little above sea level; Mexico; British Honduras; Costa Rica; Panama. Southward to Brazil and Bolivia.

A shrub or small tree to 3-5 meters, the young branches somewhat compressed, closely and finely tomentulose; leaves on stout petioles 1.5-2.5 cm. long, elliptic to ovate or obovate, 13-40 cm. long, 6-14 cm. broad, abruptly acuminate, cuneate to rounded at the base, 3-5-nerved or often 3-5-plinerved, glabrous above, densely and finely stellate-tomentulose beneath; panicles 5-15 cm. long, pedunculate, stellate-tomentulose, the branches fasciculate; flowers mostly 6-parted, sessile, subtended by lanceolate or ovate, early deciduous bracts 3-4 mm. long; hypanthium tubular, 6 mm. long, finely stellate-tomentulose; sepals ovate to lanceolate, 2.5-3.5 mm. long, deciduous at anthesis; petals obovate-oblong, 9 mm. long; anthers subulate, 6-8 mm. long; ovary almost free, commonly 4-celled; style 18 mm. long, the stigma truncate.

Miconia hondurensis Donn.-Sm. Bot. Gaz. 40: 3. 1905. *Cipit* (Petén, Maya, fide Lundell).

Wet thickets or mixed forest, 150 meters or less; Petén; Izabal. British Honduras; Honduras (type from Tela); Nicaragua; Costa Rica.

A shrub or small tree, sometimes 9 meters high with a trunk 10 cm. in diameter, glabrous throughout or nearly so; leaves on stout petioles 1-3 cm. long, subcoriaceous, elliptic to oblong, mostly 10-18 cm. long and 4-9 cm. broad, acute or abruptly and very shortly caudate-acuminate, acute or obtuse at the base, 3-plinerved, somewhat paler beneath and when dry usually yellowish green; panicles pedunculate, pyramidal, 10-20 cm. long, many-flowered, rather open, the branches mostly opposite, the flowers 5-parted, sessile or nearly so, glomerate; hypanthium tubular-campanulate, 3.5-4 mm. long, sparsely and very minutely stellate-puberulent or practically glabrous; sepals almost obsolete; petals elliptic, 3.5-4 mm. long, white, sparsely furfuraceous outside; anthers subulate, 4-4.5 mm. long; ovary half inferior, with few ovules; style 9-10 mm. long, glabrous, the stigma truncate.

Miconia humilis Cogn. in DC. Monog. Phan. 7: 764. 1891; L. Wms. Fieldiana, Bot. 29: 572. 1963. *Acinodendron humile* Kuntze, Rev. Gen. Pl. 951. 1891. *Tamonea humilis* Krasser in Engler & Prantl, Pflanzenfam. 3, Abt. 7: 188. 1893. *Huevito de paloma*.

Mostly in pine-oak forest, 1,300–2,400 meters (type from Altos de Santa Caterina, Guatemala, *Scherzer*). Zacapa; Baja Verapaz; Quezaltenango. Southern Mexico; El Salvador; Honduras; Nicaragua; Costa Rica.

A slender shrub 1.5–3 meters high, glabrous throughout or nearly so, the branches terete, rather densely leafy; leaves firm-membranaceous, on slender petioles 1–2 cm. long, ovate-oblong or oblong-lanceolate, mostly 4–7 (10) cm. long and 2–3 cm. broad, acute or acuminate, rounded to cuneate at the base, 3-pinnerved, the nerves usually rising well above the base of the blade, densely stellate-pubescent beneath at the base of the nerves, elsewhere glabrous, green or yellowish green when dried, slightly paler beneath; panicles 7 cm. long or shorter, rather few-flowered, with spreading branches, the pedicels 1–2 mm. long; hypanthium 2.5 mm. long, glabrous or with a few minute and inconspicuous scattered hairs; sepals short, obtuse; petals white, 5–6 mm. long; anthers linear, 4 mm. long; style 10–11 mm. long.

Specimens of this species have most often been determined as *M. lauriformis* Naudin, a Mexican species closely related to this and more so to *M. mexicana* (Humb. & Bonpl.) Naudin.

Miconia hyperprasina Naudin, Ann. Sci. Nat. ser. 3, 16: 186. 1851. *Cafecillo* (Jalapa).

Moist or wet, dense, mixed forest or thickets, sometimes in *Manicaria* swamps, 2,100 meters or less; Alta Verapaz; Izabal; Zacapa; Chiquimula; Jalapa; Santa Rosa. Southern Mexico; British Honduras; Honduras; Costa Rica; Panama.

A shrub or small tree, sometimes 8 meters high with a trunk 10 cm. in diameter, the young branchlets, petioles, inflorescence, and hypanthium thinly and closely stellate-puberulent with minute brown hairs; leaves on slender petioles 1–2 cm. long, usually membranaceous, narrowly oblong-lanceolate, 12–20 cm. long, 3–6 cm. broad, narrowly long-acuminate, acute or sometimes obtuse at the base, entire or undulate, green or yellowish green when dried, 3-nerved and often with a pair of additional obscure marginal nerves, glabrous above, somewhat paler beneath, glabrous; panicles much branched, many-flowered, open or dense, short-pedunculate, 10 cm. long or less, the flowers sessile, aggregate; hypanthium cupular, 1.8 mm. long; calyx tube slightly spreading, the sepals thin, semicircular, 0.8 mm. long, the exterior teeth conic, divergent; petals obovate, white, 2–2.5 mm. long; anthers linear, 2.5–3 mm. long, with a single terminal pore; ovary half inferior, 3-celled; style 5 mm. long, the stigma subcapitate.

Called “*manzana*” and “*tesuate*” in Oaxaca. The bark is light brown, rather smooth, and thin, the inner bark pale yellow or light brown. The wood is yellow throughout when freshly cut but changes to reddish brown upon exposure to the air. In Oaxaca this is reported to attain a height of 13 meters and it is reported that the wood is used there for railroad ties.

Miconia ibaguensis (Bonpl.) Triana, Trans. Linn. Soc. Bot. 28: 110. 1871. *Melastoma ibaguensis* Bonpl. in Humb. & Bonpl. Mélast. 105, t. 45. 1816.

Moist or wet, sometimes rocky thickets or hilly pine forest, 1,200 meters or less; Petén; Alta Verapaz; Izabal. Southern Mexico; British Honduras to El Salvador and Panama; West Indies; widely distributed in South America.

A shrub 2-3 meters high, or sometimes a tree 6 meters with a trunk 10 cm. in diameter, the young branches stellate-tomentose and densely hispid-hirsute with stiff spreading yellowish hairs; leaves on stout pedicels 8 mm. long or less, firm-coriaceous, often rugose, oblong or oblong-lanceolate, 8-15 cm. long, 3-6 cm. broad, acuminate or long-acuminate, obtuse or rounded at the base, 5-plinerved, entire or serrulate, stellate-pubescent above when young but in age glabrous or nearly so, the veins impressed, paler beneath, thinly setose-hirsute with simple hairs; inflorescence densely hirsute, rather narrow, with divaricate opposite branches, 10-20 cm. long, the flowers 5-parted, sessile or nearly so, crowded at the ends of the branches; hypanthium campanulate, 2.5-3 mm. long, stellate-pubescent and hirsute; calyx tube prolonged, the sepals triangular, very short, the exterior teeth triangular, equaling the sepals; petals obovate, 4 mm. long, white; anthers linear, 3.3-4 mm. long; ovary half inferior, often setose at the apex; style 7 mm. long, the stigma capitate.

Called "*uva*" and "*sirin*" in Honduras.

Miconia impetiolearis (Swartz) D. Don, Mem. Wern. Soc. 4: 316. 1823. *Melastoma impetiolearis* Swartz, Prodr. Veg. Ind. Occ. 70. 1788. *Sirin*; *oreja de danta* (Suchitepéquez); *hoja de queso* (Petén).

Moist or wet, mixed forest or thickets, often in second growth, 1,300 meters or less, chiefly at low elevations; Petén; Alta Verapaz; Izabal; Escuintla; Suchitepéquez; Retalhuleu; San Marcos. Southern Mexico; British Honduras to Panama; West Indies; South America.

A shrub or small tree 3-8 meters high, usually with rather few, stout branches, the branchlets densely stellate-tomentose with brownish hairs, obtusely quadrangular or subterete; leaves sessile, membranaceous, oblong-obovate or broadly obovate, 20-40 cm. long and 10-20 cm. broad or even larger, acuminate, cuneately narrowed to a narrow cordate base, 3-nerved, with an additional pair of slender marginal nerves, entire or remotely denticulate, deep green and glabrous above, grayish or brownish beneath and thinly to densely and finely stellate-pubescent; panicles usually large, freely branched, 10-20 cm. long, stellate-tomentose, the flowers 5-parted, sessile, glomerate; hypanthium cupular, almost 2 mm. long, densely stellate-tomentose; sepals semicircular, 0.6 mm. long, the exterior teeth triangular, wholly adnate, equaling the sepals; petals oblong-obovate, white, 2.5 mm. long; anthers linear, 2-2.5 mm. long; ovary half inferior, 3-celled; style 4 mm. long, the stigma truncate.

Called "*uva*" and "*ojancha*" in Honduras; "*maya*" (British Honduras); "*tesuate*," "*tejuate*" (Veracruz). This is a common, characteristic, and often very conspicuous large shrub or small tree in the Atlantic lowlands of Central America.

Miconia involucrata Donn.-Sm. Bot. Gaz. 37: 209. 1904.
Cachito.

Dense wet mixed forest, 350 meters or less; Alta Verapaz (type from Cubilgüitz, *Tuerckheim* 8204). British Honduras.

A tree of 7–12 meters, the branches stout, subterete or obtusely tetragonus, very thinly tomentulose or glabrate; leaves large, chartaceous, usually darkening when dried, sessile or on petioles 1 cm. long or shorter, oblong-elliptic, 25–35 cm. long, 10–17 cm. broad, shortly caudate-acuminate, rounded to cuneate at the base, 7–9-plinerved, the inner nerves arising 3–10 cm. above the base of the blade, entire or undulate, glabrous above, grayish beneath and covered with a very fine and close, stellate tomentum; panicles pyramidal, long-pedunculate, 10–20 cm. long, sparsely branched, the flowers 6-parted, sessile and densely glomerate, when young almost hidden by the broadly ovate bracts, these about 1 cm. long; hypanthium narrowly campanulate, thick-walled, in anthesis 6 mm. long, covered with a gray stellate tomentum, in fruit as much as 8 mm. broad and glabrate; calyx-tube prolonged 1 mm., the sepals oblong, apiculate, 2 mm. long, the exterior teeth wholly adnate, narrowly triangular, acuminate, 4–4.5 mm. long; petals white, oblong, 7 mm. long; anthers subulate, 10 mm. long; ovary 4-celled, the style 17 mm. long; fruit large, blue-black, lustrous.

Miconia lacera (Bonpl.) Naudin, Ann. Sci. Nat. ser. 3, 16: 152. 1851. *Melastoma lacera* Bonpl. in Humb. & Bonpl. Mélast. 9, t. 5. 1816. *Sirín*.

Moist or wet thickets, sometimes at the edges of savannas or in second growth, 350 meters or less; Petén; Alta Verapaz; Izabal. Southern Mexico; British Honduras, along the Atlantic coast to Panama; West Indies; South America.

A shrub of 1.5–3 meters, the branches slender, subterete or obtusely tetragonus, densely hirsute with dark red, stiff, spreading hairs as much as 1 cm. long, hairs of the same type present also on the petioles and inflorescence; leaves firm-membranaceous, on slender petioles 1–3 cm. long, lanceolate or oblong-lanceolate, 7–15 cm. long, 3–6 cm. broad, long-acuminate, rounded or very obtuse at the base, 3-nerved with an additional pair of obscure nerves close to the margin, long-ciliate, thinly setose above, paler and more densely setose beneath; panicles usually compact and dense, rather narrow, 5–10 cm. long, the flowers numerous, 5-parted, sessile along the branches; hypanthium cupular, 2 mm. long, glabrous or thinly setose; calyx-tube prolonged almost 1 mm., the sepals depressed-semicircular, 1.5 mm. long, long-ciliate, the exterior teeth triangular, almost wholly adnate, the free tip somewhat spreading; petals pink, oblong-obovate, 4 mm. long, deeply retuse; anthers oblong, 1.5 mm. long; style slender, uncinatate at the apex, 3 mm. long.

Miconia laevigata (L.) DC. Prodr. 3: 188. 1828; L. Wms. Fieldiana, Bot. 29: 572. 1963. *Melastoma laevigata* L. Sp. Pl. 559. 1753. *Tinajito*.

Moist or wet forest or thickets, sometimes in rather dry ravines, 1,450 meters or less; Petén; Alta Verapaz; Santa Rosa; Guatemala; Suchitepéquez. Southern Mexico; British Honduras to Panama; West Indies. Northern South America.

A slender shrub or small tree 2–4.5 meters high, the young branches sparsely stellate-furfuraceous with brown appressed scales, soon glabrate; leaves on slender petioles 1.5–4 cm. long, thin, green when dried, ovate-lanceolate to oblong, 10–20 cm. long, 3–8 cm. broad, long-acuminate, obtuse or rounded at the base, entire or obscurely repand-denticulate, 3–5-nerved, when young sparsely and minutely stellate-furfuraceous on both surfaces, soon glabrate; panicles long-pedunculate, many-flowered, 8–15 cm. long, minutely stellate-furfuraceous; hypanthium campanulate, 1.5–2 mm. long, stellate-puberulent; calyx tube somewhat spreading, the sepals depressed-ovate or semicircular, 1 mm. long, the exterior teeth adnate to the middle of the calyx; petals obovate, white, thin, 3–4 mm. long; anthers linear, 2.7–3.5 mm. long; ovary 3-celled, half inferior, glabrous at the apex; style slender, 6–7 mm. long, the stigma truncate or subcapitate.

Called “*sirín*” in El Salvador.

Miconia lateriflora Cogn. Bol. Mus. Goeldi 5: 255. 1909. *Os-saea ciliata* Cogn. in DC. Monog. Phan. 7: 1067. 1891. *O. disparalis* Standl. Contr. Arnold Arb. 5: 120, *t.* 17. 1933. *Miconia disparalis* R. O. Williams, Fl. Trinidad 1: 388. 1934.

Moist or wet, mixed lowland forest or thickets, 500 meters or less; Alta Verapaz; Izabal. British Honduras; Honduras; Nicaragua; Panama. Northern South America.

A shrub of 1.5–3 meters, glabrous throughout or nearly so, the branches slender; leaves membranaceous, lustrous, on slender petioles 5–25 mm. long, broadly elliptic to oblong-elliptic, 10–20 cm. long, 5–8 cm. broad, caudately long-acuminate, cuneate to almost rounded at the base, 3-nerved, usually blackening when dried, minutely crenate; inflorescence small, few-branched, open or dense, rather few-flowered, generally 5 cm. long or less, pedunculate, minutely furfuraceous at the nodes, the flowers 4-parted, sessile in terminal clusters; hypanthium tubular, 3.5 mm. long; sepals almost obsolete, the exterior teeth narrowly triangular, acuminate, 1.5 mm. long; petals obovate, 1.5 mm. long, white; anthers subulate, 3–3.5 mm. long; stigma truncate; fruit 8-costate, glandular-pilose.

Miconia longifolia (Aubl.) DC. Prodr. 3: 184. 1828. *Melastoma longifolia* Aubl. Pl. Guian. 1: 432, *t.* 170. 1775.

Moist or wet, mixed forest or thickets, 500–900 meters, or even at sea level; Petén; Escuintla; San Marcos. Mexico; British Honduras to Panama. Widely distributed in South America.

A shrub of 2-3 meters, or sometimes a tree of 9 meters with a trunk 10 cm. in diameter, the young branches acutely tetragonous, minutely furfuraceous, soon glabrate; leaves usually in whorls of 3, generally blackish when dried, thick-membranaceous, on petioles 5-15 mm. long, oblong-lanceolate to narrowly obovate, 8-18 cm. long, 2.5-6 cm. broad, rather abruptly short-acuminate, cuneate at the base, 3-plinerved, entire, glabrous or nearly so; panicles 5-15 cm. long, widely branched, minutely furfuraceous, the principal branches usually 4-6 at each node, the flowers 5-parted, sessile or nearly so; hypanthium broadly campanulate, glabrous or essentially so, 2-2.5 mm. long; sepals minute, truncate or depressed-triangular; petals broadly obovate, 1.2 mm. long, white; anthers 1-2 mm. long, the stigma truncate or punctiform.

Miconia Lundelliana L. Wms. Fieldiana, Bot. 29:573, t. 17. 1963.

In pine forests, endemic in British Honduras (type *Gentle* 8516).

Small trees, branches slender, terete or slightly flattened when very young, obscurely pubescent with small, glandular, peltate scales, becoming glabrous; leaves of a pair equal or nearly so, narrowly ovate to ovate, acute, the base rounded or slightly cordate, short petiolate, 5-plinerved, the lateral pair often obscure, glossy green above, lighter below, glabrous above, furfuraceous below with subglandular peltate scales, densely so on the veins, sparsely so on the surface of the blades; blades 3-7 cm. long and 1.5-4 cm. broad; inflorescence terminal, either a simple or a compound dichasium, few-flowered if compound, usually not exceeding the leaves, each lateral flower subtended by two small linear bracts, the bracts either at the apex of the pedicel or one at the base (abaxial) and one at the summit (adaxial), the terminal flower of a simple dichasium usually bractless, the inflorescence, hypanthium and calyx covered with furfuraceous, subglandular scale-like pubescence; hypanthium campanulate in flower, becoming subglobose in fruit, mostly 4-5 mm. long and in fruit nearly as broad; calyx with six subapical dorsal appendages, in flower 5-6 mm. long, thick and coriaceous, the dorsal appendages thick and laterally flattened, about 3 mm. long; petals broadly oblanceolate, sometimes fimbriate or irregular near the base, acute, rather fleshy, with about 5 principal nerves, about 10 mm. long and 6 mm. broad; stamens similar, 12, the anthers linear oblong, opening by a single terminal pore, about 3.5 mm. long, filaments about 3 mm. long, connective not appendaged.

An unusual species allied to West Indian plants most often referred to the genus *Pachyanthus*.

Miconia Matthaei Naudin, Ann. Sci. Nat. ser. 3, 16: 176. 1851.

Moist or wet forest or thickets, 200 meters or less; Alta Verapaz. Southern Mexico; British Honduras; Honduras; Costa Rica; South America.

A small tree of 6-12 meters, the trunk as much as 25 cm. in diameter, the young branches very densely setose-hirsute with brownish, curved, ascending hairs; leaves on stout hirsute petioles 1-2 cm. long, subchartaceous, often lustrous, lanceolate to narrowly oblong-elliptic, 15-25 cm. long, 3-7 cm. broad, long-acuminate, narrowed to an acute base, 3-nerved, entire or nearly so, glabrous above, paler

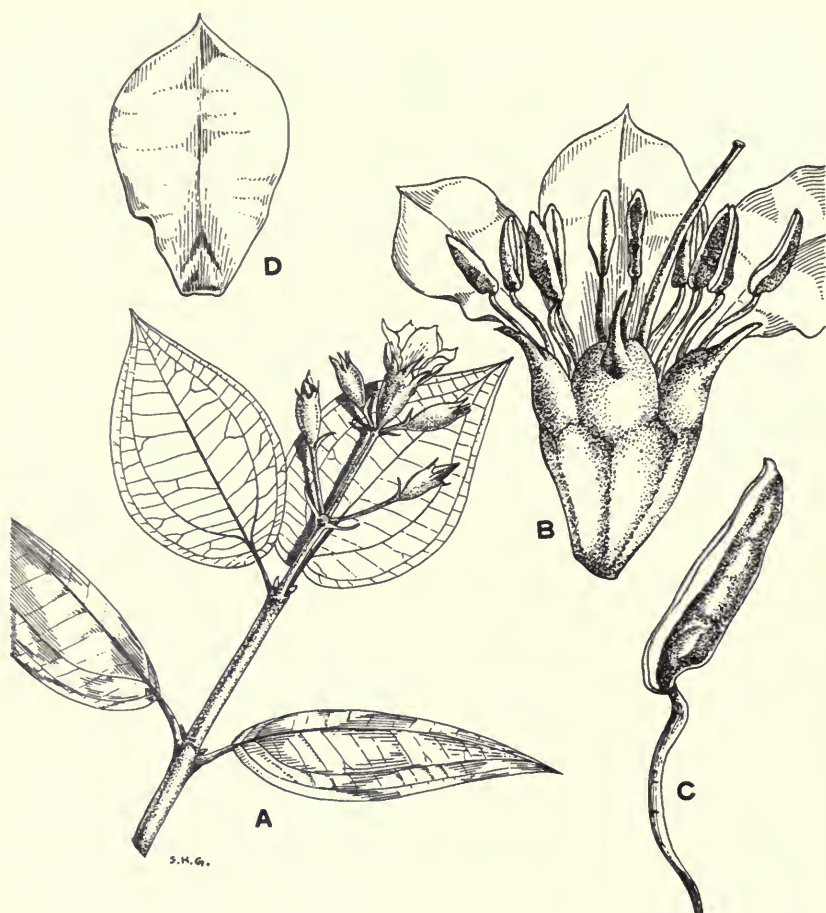


FIG. 74. *Miconia Lundelliana*. A, Habit; $\times 1$. B, Flower, partly dissected; $\times 3$. C, Stamens; $\times 5$. D, Petal; $\times 3$.

beneath and short-hirsute with brown hairs; inflorescence pyramidal, many-flowered, widely branched, densely brown-hirsute, the bracts subulate, almost 1 cm. long, the flowers sessile, 5-parted, densely surrounded by long stiff hairs; hypanthium narrowly campanulate, 2.5 mm. long, thinly stellate-furfuraceous and sparsely hirsute; sepals triangular, obtuse, 1.2 mm. long, the exterior teeth wholly adnate, bearing at the apex a tuft of long bristles; petals obovate-oblong, 3.5 mm. long, white; anthers 3.4–4.3 mm. long; style 9 mm. long, the stigma capitate.

Miconia mexicana (Humb. & Bonpl.) Naudin, Ann. Sci. Nat. ser. 3, 16: 244. 1851. *Melastoma mexicana* Humb. & Bonpl. Mélast. 128, t. 55. 1816. *M. conostegioides* Naudin, Ann. Sci. Nat. ser. 3,

16:127. 1851. *M. mexicana* var. *conostegioides* Cogn. in DC. Monog. Phan. 7: 763. 1891.

Moist or wet, mixed or pine forest, or in thickets or pastures, sometimes in open brushy swamps, 1,200–2,600 meters; Alta Verapaz; Baja Verapaz; Zacapa; Chiquimula; Jalapa; Quiché; Quezaltenango; San Marcos. Southern Mexico; Honduras.

A rather slender shrub 1–3 meters high, the branches often dark purple, subterete, when young somewhat furfuraceous but in age glabrous or nearly so; leaves on slender petioles 1–4 cm. long, oblong-lanceolate or oblong-ovate, mostly 10–18 cm. long and 4–7 cm. broad, acuminate or long-acuminate, rounded or cuneate at the base, 3-plinerved, with a pair of inconspicuous additional nerves close to the margin, entire or nearly so, not darkening when dried, glabrous above, paler beneath, stellate-tomentose at the base of the nerves, elsewhere glabrous or nearly so; panicles 15 cm. long or shorter, widely branched, many-flowered, stellate-furfuraceous with brownish hairs or usually almost wholly glabrous, the flowers on pedicels 1–5 mm. long; hypanthium 3–4 mm. long, glabrous or nearly so, the sepals short; petals white or tinged with pink, 5 mm. long; style 8–10 mm. long, the stigma punctiform.

The species is a somewhat variable one and it is quite possible that some of the extreme forms now referred here may prove to be distinct species when better and ampler material is available for critical study. Most extreme of the forms is one collected in Chiquimula and southern Mexico, in which the leaves are rather densely stellate-pubescent beneath over almost the whole surface. The leaves frequently are wine-red or purple beneath, especially when young. In this as well as in some other species the inflorescences often are attacked by insects, and deformed into large galls.

Miconia mirabilis (Aubl.) L. Wms. Fieldiana, Bot. 29: 574. 1963. *Fothergilla mirabilis* Aubl. Pl. Guian. 1: 441, f. 175. 1775. *Tamonea guianensis* Aubl. l.c. in some copies. *Miconia guianensis* Cogn. in Mart. Fl. Bras. 14, pt. 4: 245. 1887.

Known in North America by but few collections. Mexico; British Honduras; Costa Rica; West Indies; the Guianas. South to the state of Guanabara in Brazil.

Small trees to 10 meters high with a trunk 15 cm. in diameter; branches densely ferruginous stellate-pubescent, terete or slightly angled; leaves lanceolate to oblong-lanceolate, acuminate, 3–5-nerved, glabrous above, densely ferruginous stellate-tomentose below, long petiolate, the blade 8–15 cm. long and 2.5–5 cm. broad, petiole to 5.5 cm. long and ferruginous; inflorescence a rather simple thyrse, shorter than the subtending leaves; bracts subtending the flowers, about 7 mm. long, oblong-obovate, furfuraceous, soon deciduous; hypanthium and calyx at anthesis 4–5 mm. long, completely glabrous outside, the calyx obscurely lobate and flared; petals obovate or oblong-obovate, 5 mm. long.

The description drawn from a specimen in Lundell Herbarium, *Gentle* 3149 from British Honduras.

Miconia nervosa (Smith) Triana, Trans. Linn. Soc. Bot. 28: 111. 1871. *Melastoma nervosa* Smith in Rees, Cycl. 23. 1819.

Wet thickets or mixed forest, often in second growth, 250 meters or less; Alta Verapaz; Izabal. Southern Mexico; British Honduras; Costa Rica; Panama. Southward to the Amazon valley.

A shrub or small tree 1.5–6 meters high, the branches subterete, densely strigose; leaves on stout petioles 1–2 cm. long, those of a pair often unequal, rather thin and soft, elliptic to ovate-elliptic, acute or acuminate, cuneate and decurrent at the base, 5–7-plinerved, the inner nerves arising far above the base of the blade, entire or nearly so, densely hirsute above with appressed or somewhat spreading hairs, densely and softly pilose and sericeous beneath; inflorescence densely strigose, short-pedunculate or sessile, shorter than the leaves, narrow and almost spike-like, the branches very short, remote, the flowers 5-parted, sessile in dense clusters; hypanthium tubular-campanulate, 3.5–4 mm. long, densely strigose; sepals depressed-triangular, very short; petals oblong-obovate, 3–3.5 mm. long, white or pinkish; anthers linear, 3.5–4 mm. long; ovary less than half inferior, finely pubescent; style 6 mm. long, the stigma truncate.

Miconia nutans Donn.-Sm. Bot. Gaz. 42: 296. 1906. *Cinco negritos* (San Marcos).

Moist or wet forest, 350–1,500 meters; Alta Verapaz; San Marcos. Costa Rica.

A stout shrub of 1.5–3 meters, the young branches obtusely tetragonous, covered with a dense but minute and appressed, brownish, furfuraceous tomentum; leaves on stout petioles 2–3 cm. long, chartaceous, obovate-oblong, 15–25 cm. long, 7–10 cm. broad, caudate-acuminate, somewhat narrowed to the cuneate base, 5-plinerved, the inner nerves arising well above the base of the blade, glabrous above, green beneath, when young rather densely lepidote-furfuraceous with very small, brown trichomes, in age glabrate and very sparsely lepidote, entire or repand-denticulate; panicles pedunculate, equaling or shorter than the leaves, much branched, finely and minutely lepidote, the branches opposite, the flowers very numerous, sessile or short-pedicellate; hypanthium 3.5 mm. long, furfuraceous-lepidote, subglobose; sepals ovate; petals narrow, 4 mm. long; anthers 3 mm. long; ovary almost wholly adnate, the style 7–8 mm. long; fruit depressed-globose, 3–4.5 mm. in diameter, 10-costate.

Miconia obovalis Naudin, Ann. Sci. Nat. ser. 3, 16: 183. 1851.

Wet forest or thickets, 350 meters. British Honduras; West Indies; South America.

A large shrub or a small tree as much as 8 meters high with a trunk 10 cm. in diameter, the young branches somewhat flattened or subterete, densely and

coarsely brown-furfuraceous; leaves on stout petioles 1 cm. long, thick-membranaceous, oblong-obovate, 15–30 cm. long, 6–12 cm. broad, abruptly acuminate, acute at the base and long-decurrent on the petiole, 3-plinerved, often with an additional pair of inconspicuous submarginal nerves, entire or nearly so, glabrous and lustrous above, minutely furfuraceous beneath on the nerves and veins; panicles pyramidal, 10–20 cm. long, brown-tomentulose, the branches rather few, compressed, widely spreading, the flowers sessile, glomerate; hypanthium campanulate, 2.5 mm. long, thinly stellate-puberulent; calyx tube suberect, the sepals acutely triangular, almost 1 mm. long, the outer teeth completely adnate, slightly shorter than the sepals; petals narrowly obovate, retuse, 3–3.5 mm. long, creamy white; anthers linear, the longer ones 3–3.5 mm. long, opening by a terminal pore; ovary half inferior; style slender, 5.5–6 mm. long, the stigma capitate.

Closely related to *Miconia prasina* (Sw.) DC.

***Miconia ochroleuca* Standl.** Field Mus. Bot. 11: 138. 1932.

Wet mixed forest, at or little above sea level; endemic; British Honduras (type from Middlesex, Stann Creek District, *W. A. Schipp* 467; collected also at Forest Home).

A shrub or small tree 2–8 meters high, almost glabrous throughout; leaves on slender petioles 1 cm. long or shorter, membranaceous, drying green, elliptic or oblong, 9–19 cm. long, 3.5–7.5 cm. broad, acuminate with an obtuse tip, acute or subobtuse at the base, 3-plinerved, entire or repand; panicles rather few-flowered, 3–5 cm. long, short-pedunculate, the few branches opposite, racemiform, the flowers sessile or short-pedicellate; hypanthium cupular, 10-costate, very minutely and sparsely furfuraceous; calyx tube short, erect, the sepals triangular, acute, 0.5 mm. long; exterior teeth none; petals oblong, white or cream-colored, 2 mm. long, retuse; anthers linear, 2.4–2.7 mm. long; ovary half inferior, 2-celled, glabrous at the apex; style slender, 5.5 mm. long, the stigma truncate.

***Miconia oinochrophylla* Donn.-Sm.** Bot. Gaz. 40: 4. 1905.

Wet thickets or mixed forest, at or near sea level; Izabal (type from Livingston, *Tuerckheim* 8684). Mexico; British Honduras; Honduras; Panama; Colombia.

A shrub of 1.5–3 meters, glabrous throughout; leaves on slender petioles 1–7 cm. long, bright green above, wine-red or purple beneath, firm-membranaceous, lanceolate to narrowly oblong, 12–22 cm. long, 3–7 cm. broad, acuminate, acute or obtuse at the base, 3-nerved with an additional pair of inconspicuous submarginal nerves, entire or nearly so; panicles small or elongate, narrow, rarely 20 cm. long, many-flowered, the branches short, the flowers secund, sessile, 5-parted, the bracts persistent, broadly triangular, small; hypanthium subglobose, 2–2.5 mm. long, the calyx tube short, erect, the sepals obsolete or nearly so; exterior teeth none; petals oblong-obovate, 2.5–3 mm. long, white tinged with pink; anthers thick, linear, 1.7 mm. long, opening by a minute pore; ovary almost wholly inferior, 5-celled, minutely glandular at the apex; style stout, 2.5 mm. long, bent at a right angle at the apex, the stigma punctiform.

Called "purple maya" in British Honduras. The shrub is a handsome and conspicuous one because of the brilliant wine-colored lower surfaces of the large leaves.

Miconia oligocephala Donn.-Sm. Bot. Gaz. 46: 111. 1909.

Known only from the type, Cobán, Alta Verapaz, 1,550 meters, *Tuerckheim* II.1781.

A shrub or small tree as much as 8 meters high with a trunk 10 cm. in diameter, the young branches compressed, rather thinly and closely stellate-tomentulose, becoming terete and glabrate; leaves rather thick, on petioles 1–2 cm. long, lanceolate or narrowly lance-elliptic, 10–20 cm. long, 2.5–5 cm. broad, acuminate, acute at the base, 5-plinerved, denticulate, glabrous and deep green above, the nerves impressed, grayish or white beneath, covered with a very dense, fine, stellate tomentum; panicles densely pale-tomentulose, 5–8 cm. long, pedunculate, many-flowered, dense or open, the flowers 5-parted, sessile, densely glomerate; hypanthium cupular, 2.2 mm. long, stellate-tomentose; calyx tube prolonged 1 mm., the sepals oblong, obtuse, 2.3 mm. long, exterior teeth adnate almost to the apex; petals obovate, 4–4.5 mm. long, white; anthers oblong, 3 mm. long; style 6 mm. long, the stigma truncate.

In general appearance the shrub much resembles *Conostegia xalapensis*.

Miconia platyphylla (Benth.) L. Wms. Fieldiana, Bot. 29: 575. 1963. *Tococa platyphylla* Benth. Pl. Hartw. 181. 1845. *Miconia paleacea* Cogn. in DC. Monog. Phan. 7: 757. 1891. *Tococa grandifolia* Standl. Field Mus. Bot. 4: 319. 1929 (type from Honduras).

Wet mixed forest or thickets, at or near sea level; Izabal. British Honduras; Honduras; Nicaragua; Costa Rica.

A stout shrub 1–3.5 meters high, the branches thick, densely covered with long, stout, deflexed or recurved setae, these somewhat compressed at the base; leaves on stout petioles 3–7 cm. long, these setose like the branches; leaf blades broadly elliptic or oval, somewhat succulent, 30–50 cm. long, 20–30 cm. broad, rounded and abruptly short-acuminate at the apex, rounded at the base, 5-nerved, entire or denticulate, dark green and glabrous above, sometimes purplish beneath, thinly or densely setose on the nerves and veins, glabrous on the surface; panicles dense, many-flowered, dull red or pinkish, 5–15 cm. long, densely setose, the flowers sessile, glomerate, the bracts subulate, 5 mm. long; hypanthium narrowly campanulate, 3.5 mm. long, tomentose; calyx tube short, truncate or undulate, densely pubescent, the sepals obsolete; petals pink or almost white, obovate, 4 mm. long; anthers subulate, 4 mm. long; ovary 4-celled, mostly superior; style 9–10 mm. long, bent near the apex.

Miconia prasina (Swartz) DC. Prodr. 3: 188. 1828. *Melastoma prasina* Swartz, Prodr. Veg. Ind. Occ. 69. 1788.

Moist or wet, mixed forest, 350–900 meters; Alta Verapaz; Quetzaltenango. Southern Mexico; British Honduras to Panama; West Indies. Widely distributed in South America.

A shrub or small tree, sometimes 9 meters high with a trunk 20 cm. in diameter, the young branches obtusely tetraginous, minutely stellate-furfuraceous; leaves membranaceous or thicker, on marginate petioles 5–20 mm. long, lanceolate to oblong, 10–22 cm. long, 3–8 cm. broad, acuminate, acute or acuminate at the base, (3–) 5-plinerved, entire or denticulate, sometimes minutely puberulent when young but in age glabrous or practically so, somewhat paler beneath; panicles large and freely branched, 5–20 cm. long, the branches elongate, spreading, opposite, minutely stellate-furfuraceous or almost glabrous, the flowers numerous, 5-parted, sessile or nearly so, crowded near the ends of the branches; hypanthium campanulate, 2–2.5 mm. long, sparsely stellate-puberulent; calyx tube shortly prolonged, the sepals subtriangular to rounded, 0.2–0.7 mm. long, acute or obtuse; petals obovate, white, 2.5–3 mm. long, furfuraceous; anthers somewhat curved, 2.5–3.5 mm. long; ovary half inferior, 3-celled; style 5–6 mm. long, slightly dilated upward, the stigma truncate; fruit black.

Material of this species has been determined often as *Miconia pteropoda* Benth., a British Guiana species which may be a synonym.

Miconia punctata (Desr.) D. Don, Mem. Wern. Soc. 4: 316. 1823. *Melastoma punctata* Desr. in Lam. Encycl. 4: 50. 1797. *Miconia habrolepis* Standl. Field Mus. Bot. 4: 319. 1929 (type from Cubilgüitz, *Tuerckheim* 4118).

Wet mixed forest, 600 meters or less; Alta Verapaz; Izabal. Mexico (Chiapas); British Honduras; Honduras; Costa Rica; Greater Antilles; South America.

A large shrub or a tree, sometimes 12 meters high with a trunk 12 cm. or more in diameter, the young branches stout, sharply tetraginous, densely brown-lepidote; leaves on stout petioles 1–3 cm. long, subcoriaceous, obovate-oblong or elliptic-oblong, 12–28 cm. long, 4–10 cm. broad, narrowly acuminate or cuspidate-acuminate, acute or obtuse at the base, entire, 3-nerved, with an additional pair of inconspicuous marginal nerves, deep green and glabrous above, very densely brown-lepidote beneath; panicles pyramidal, divaricately branched, densely lepidote, 15–30 cm. long, the flowers 5-parted, somewhat secund, sessile; hypanthium cupular, 1.5 mm. long, densely lepidote, the calyx tube short, erect; sepals triangular, acute, 0.2 mm. long; petals obovate, 2.5 mm. long, white; anthers linear, 1.2 mm. long, opening by a large terminal pore; style 4–4.5 mm. long, the stigma truncate.

Called “red maya,” “*caperote*” and “*sirin*” in British Honduras.

Miconia purulensis Donn.-Sm. Bot. Gaz. 46: 111. 1908.

Dense, moist or wet, mixed, mountain forest, 1,400–1,800 meters; endemic; Alta Verapaz (type from Purulhá, *Tuerckheim* II.1718; collected at various other localities, principally about Tactic).

A shrub of 2–3 meters, the branches obtusely tetragonous, densely hispidulous-furfuraceous with spreading, stout, somewhat plumose hairs, the petioles and inflorescence similarly pubescent; leaves membranaceous, somewhat rugose or bullate, on slender petioles 2–7 cm. long, oblong-elliptic, mostly 11–20 cm. long and 5–9 cm. broad, acuminate, rounded to subacute at the base, 5-nerved, entire or denticulate, glabrous above or nearly so, deep green, the nerves and veins impressed, slightly paler beneath, thinly plumose-paleaceous on the nerves and veins, glabrous on the surface; panicles broadly pyramidal, pedunculate or sessile, mostly 10–14 cm. long, the branches usually verticillate, spreading, the flowers hemispheric, 1.5 mm. long, glabrous; calyx teeth deltoid, very obtuse; petals orbicular, white, 1.5 mm. long; anthers straight, 1 mm. long, oblong-cuneate, opening by 2 large terminal pores.

Miconia reducens Triana, Trans. Linn. Soc. Bot. 28: 361. 1871.

Moist or wet forest, 900 meters or lower; Petén (Camp 36, British Honduras boundary, *W. A. Schipp* 1244). British Honduras; Costa Rica; Colombia and Ecuador.

A small tree 9 meters high, the trunk 12 cm. in diameter, glabrous throughout; young branches acutely tetragonous; leaves on stout petioles 1.5–3.5 cm. long, firm-membranaceous, oblong or elliptic-oblong, somewhat lustrous, 12–20 cm. long, 4–7 cm. broad, short-acuminate or obtuse and apiculate, acute or obtuse at the base, entire, 5-plinerved; panicles rather narrow, pedunculate, commonly 15–20 cm. long, most of the branches opposite, the flowers 5-parted, sessile, secund; hypanthium cylindric, 4 mm. long, the calyx tube slightly prolonged, somewhat spreading; sepals depressed-semicircular, 1.4 mm. long, the exterior teeth consisting of minute protuberances; petals rose-colored, oblong-obovate, 8 mm. long, retuse; anthers oblong, arcuate, 3 mm. long; ovary inferior, 3-celled; style thickened below, 6 mm. long, bent near the apex, the stigma capitate.

This has been reported from British Honduras as *M. subnodosa* Triana.

Miconia Schippii Standl. Field Mus. Bot. 8: 29. 1930.

In *Manicaria* swamps, at sea level; Izabal (Puerto Barrios, *Standley* 73158). British Honduras, the type from Big Creek, Stann Creek District, *W. A. Schipp* 220; Nicaragua.

A shrub 2 meters high, the slender branches obtusely tetragonous, glabrous or with a few scattered long spreading setae, especially at the nodes; leaves on slender petioles 1–3 cm. long, these long-pilose; leaf blades firm-membranaceous, elliptic-oblong or lance-oblong, 11–22 cm. long, 4–9 cm. broad, acuminate, rounded at the base, 5-nerved, serrulate, ciliate, sparsely short-setose above, glabrous beneath on the surface, sparsely setose-hirsute on the nerves; inflorescence thyrsiform-paniculate, pedunculate, 10–15 cm. long, the flowers numerous, sessile, secund, 5-parted; hypanthium 2–2.2 mm. long, subglobose, glabrous, the calyx tube shortly prolonged; sepals semicircular, 1 mm. long, the exterior teeth spreading at a right angle, conic at the base, terminated by a slender seta; petals oblong-

obovate, about 4 mm. long, pink or white; anthers oblong, 1.5 mm. long; style slender, bent at the apex.

Very closely related to *M. lacera*.

Miconia Schlechtendalii Cogn. in DC. Monog. Phan. 7: 804. 1891.

Moist or wet, mixed forest or thickets, sometimes in pine forest or on open rocky slopes, 600–1,500 meters, or sometimes descending nearly or quite to sea level; Petén; Chiquimula; Santa Rosa; Huehuetenango. Southern Mexico; British Honduras; Honduras.

A shrub 1–3 meters high, or sometimes a tree of 8 meters with a trunk 10 cm. in diameter, the branches terete, almost glabrous; leaves firm-membranaceous, on petioles 1–1.5 cm. long, often lustrous, lanceolate or narrowly oblong, 8–14 cm. long, 2–4 cm. broad, acute or acuminate, cuneate at the base and decurrent, often almost to the base of the petiole, 3-plinerved, entire or nearly so, glabrous above, somewhat paler beneath, brownish-furfuraceous on the nerves, elsewhere glabrous or nearly so; panicles narrow or pyramidal, usually 10–15 cm. long, the branches opposite, glabrous or sparsely and minutely stellate-furfuraceous, the flowers in dense terminal glomerules, sessile; hypanthium campanulate, 2.5–3 mm. long, stellate-puberulent; sepals depressed-semicircular, 0.7–0.9 mm. long, the exterior teeth obsolete; petals obovate-oblong, 3–3.5 mm. long, not retuse, white; anthers linear, almost straight, 3–3.5 mm. long; ovary half inferior, 3-celled, glabrous at the apex; style 6–8 mm. long, the stigma truncate.

Closely related to *M. prasina* (Sw.) DC.

Miconia Schlimii Triana, Trans. Linn. Soc. Bot. 28: 102. 1871. *Siril de shara* (fide Morales).

Moist or wet thickets, sometimes along stream banks, 250–400 meters; Izabal; Petén; Escuintla; Suchitepéquez; Alta Verapaz. British Honduras to Panama; Colombia.

A shrub 2 meters high, or sometimes a tree of 9 meters with a trunk 10 cm. in diameter, the young branches subterete, coarsely stellate-tomentose with brown hairs; leaves on slender petioles about 1 cm. long, firm-membranaceous, lanceolate, as much as 17 cm. long and 7 cm. broad but usually much smaller, acuminate, acute at the base, 5-plinerved, remotely denticulate and ciliate, the inner nerves arising far above the base of the blade, deep green and glabrous above, sparsely stellate-pubescent beneath, densely so on the nerves; inflorescence terminal or sometimes lateral, panicles 3–7 cm. long, divaricately branched, rather few-flowered, the flowers 6-parted, sessile but appearing long-pedicellate; hypanthium broadly campanulate, 3.5 mm. long, stellate-pubescent, the calyx tube somewhat spreading, 2 mm. long, truncate or barely undulate, the sepals obsolete; exterior teeth minute, conic, divergent; petals 10 mm. long, white, broadly obovate; anthers oblong, 4.5–5 mm. long, 4-celled, opening by a minute terminal pore; ovary wholly inferior, 5-celled; style stout, glabrous, 14 mm. long, the stigma capitate.

Called "*quina blanca*" in El Salvador; "*sirín*," "*sirín blanco*" (Honduras).

Miconia serrulata (DC.) Naudin, Ann. Sci. Nat. ser. 3, 16: 118. 1851. *Diplochita serrulata* DC. Prodr. 3: 177. 1828. *Chitonía macrophylla* D. Don, Mem. Wern. Soc. 4: 319. 1823. *Miconia macrophylla* Triana, Trans. Linn. Soc. Bot. 28: 103. 1871, *non* Steud. 1844. *Miconia belizensis* Standl. Field Mus. Bot. 8: 30. 1930 (type, British Honduras, Schipp 395).

Moist or wet mixed forests to 500 meters; Alta Verapaz; Huehuetenango. Mexico through Central America and Panama; West Indies. South America to Brazil and Peru.

A large shrub or a small tree, commonly 2.5–9 meters high, the young branches compressed, becoming terete, very densely and finely stellate-furfuraceous with a brown or ferruginous tomentum; leaves thick-membranaceous, on petioles 3–6 cm. long, ovate to ovate-oblong or elliptic, mostly 15–25 cm. long, acute or acuminate, rounded or obtuse at the base and often emarginate, 5–7-nerved, denticulate or almost entire, somewhat puberulent above when young but in age glabrous or nearly so, brownish beneath, very closely and finely stellate-tomentulose; panicles 10–30 cm. long, pedunculate, densely stellate-tomentulose with ferruginous or brown tomentum, the branches stout, opposite, the flowers 6-parted, sessile, glomerate; hypanthium 6–7 mm. long, densely and minutely stellate-tomentulose; calyx truncate, the sepals obsolete or nearly so; petals white or pinkish, 6–8 mm. long; style pilose below, 11–13 mm. long; fruit subglobose, 6 mm. in diameter.

Called "*tesuate*" in Oaxaca.

Miconia silvestris Gleason, Brittonia 2: 321. 1937.

Wet mixed forest, 500 meters or less; Izabal. British Honduras; Costa Rica.

A shrub 3 meters tall, appearing glabrous throughout or nearly so, the young branchlets sometimes minutely pilosulous with simple hairs; leaves membranaceous, on slender petioles 1–3.5 cm. long, usually darkening when dried, elliptic-oblong to elliptic, as much as 20 cm. long and 7.5 cm. broad, acuminate, acute or broadly cuneate at the base, 5-plinerved, entire or nearly so, sometimes minutely pilosulous when young but in age glabrous; inflorescence pyramidal-paniculate, 4–13 cm. long, short-pedunculate, opposite or verticillate, sparsely and minutely pilosulous or glabrate, the flowers 4-parted, sessile; hypanthium subglobose, 1.6 mm. long, obscurely 8-costate; calyx 0.8 mm. long, thin-membranaceous, at anthesis irregularly ruptured, the outer teeth minute, tuberculiform, acute; petals ovate, 1.8 mm. long and slightly broader, subacute; anthers thick, linear, 2 mm. long, opening by a minute dorso-terminal pore; ovary semi-inferior, 2-celled, glabrous at rounded apex; style straight, glabrous, 3.3 mm. long, stigma truncate.

Miconia stenostachya DC. Prodr. 3: 181. 1828.

Chiefly in hilly pine forest or in savannas, 350 meters or less;

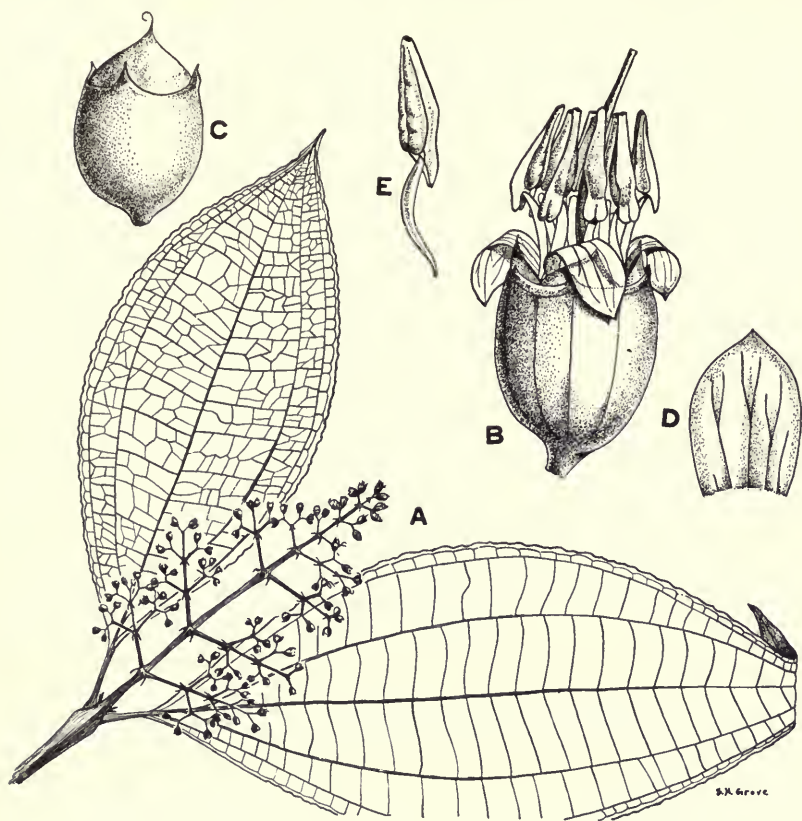


FIG. 75. *Miconia silvestris*. A, Habit; $\times \frac{1}{2}$. B, Flower; $\times 5$. C, Bud showing entire calyptriform calyx before rupture; $\times 10$. D, Petal; $\times 10$. E, Anther; $\times 7\frac{1}{2}$.

Petén; reported from Alta Verapaz; Izabal. Southern Mexico; British Honduras; Costa Rica; Panama; South America.

Usually a shrub about a meter high, the young branches obtusely tetragonous, whitish-tomentulose; leaves rather thick, on stout petioles 1–3 cm. long, oblong or ovate-oblong, mostly 8–15 cm. long, and 3–6 cm. broad, obtuse or short-acuminate, rounded at the base, 3–5-nerved, deep green, lustrous, and glabrous above, densely covered beneath with a very dense, appressed, stellate, white tomentum, entire; panicles dense, 5–15 cm. long, narrow, whitish-tomentulose, the branches short, the flowers 5-parted, sessile, secund; hypanthium campanulate, 3 mm. long, whitish-tomentulose; calyx tube very short, the sepals broadly triangular, subacute; petals broadly ovate, 3–5 mm. long, minutely glandular-ciliate, white; anthers stout-linear, 3.5–4.5 mm. long; ovary half inferior; style 7 mm. long, the stigma conic or punctiform.

It is presumably this species that has been reported from Guatemala as *M. argyrophylla* DC. Called "pine ridge sirín" in British Honduras. Closely related to *M. punctata*.

Miconia tixixensis Standl. & Steyerl. Field Mus. Bot. 23: 181. 1944.

Known only from the type, Chiquimula, Cerro Tixixí, 3–5 miles north of Jocotán, in cloud forest, 1,500 meters, *Steyermark* 31585.

A shrub 1.5–2.5 meters tall, the branches slender, very densely stellate-tomentose, the hairs partly small and sessile, partly elongate, spreading, thickened below, stellately branched at the apex, the tomentum brownish, the petioles and inflorescence covered with similar pubescence; leaves membranaceous, on slender petioles 1–2 cm. long, lanceolate or narrowly lanceolate, 8–12.5 cm. long, 2–3 cm. broad, narrowly attenuate-acuminate, gradually narrowed to the acute base, 3–5-plinerved, the outer nerves in 5-plinerved leaves close to the margin and obscure, the inner nerves arising far above the base of the blade, green above, densely and minutely scaberrulous, glaucescent beneath, densely and minutely stellate-puberulent with sessile hairs; inflorescence small, short-pedunculate, few-flowered, 2.5 cm. long, the few branches stout, spreading, the flowers 5-parted, sessile, glomerate at the ends of the branches; fruiting hypanthium subglobose, 5 mm. long, very densely echinulate-setose, the hairs ample, rigid, thickened below, shortly stellate-branched at the apex; exterior calyx lobes subulate, erect, 2.5 mm. long, densely stellate-setulose.

Miconia tomentosa (L. Rich.) D. Don, Mem. Wern. Soc. 4: 316. 1823. *Melastoma tomentosa* L. Rich. Act. Soc. Hist. Nat. Paris 1792: 109. 1792.

Forested swamps, at or near sea level; British Honduras; Cuba; South America.

A large shrub or a small tree as much as 9 meters high, the young branches stout, densely covered with a rough brown stellate tomentum; leaves firm-membranaceous, sessile or nearly so, elliptic-oblong to rhombic-ovate, 20–40 cm. long, 10–20 cm. broad, broadest below the middle, acuminate or long-acuminate, cuneate at the base, 3-plinerved, the lateral nerves rising far above the base of the blade, entire or nearly so, stellate-tomentose above when young but in age glabrous or nearly so, brown and laxly stellate-tomentose beneath; inflorescence narrow, long-pedunculate, 10–20 cm. long, densely stellate-tomentose, the stout branches angulate, the flowers 5-parted, sessile; hypanthium campanulate, 5 mm. long or in age much longer, densely stellate-tomentose; calyx tube slightly spreading, 1.5–2 mm. long, the sepals triangular-ovate, 1–1.5 mm. long; petals oblong-obovate, 7 mm. long, white, retuse; anthers unequal, subulate, 5.2–7.5 mm. long; style 13–15 mm. long, sparsely glandular-puberulent.

Miconia trinervia (Sw.) D. Don ex Loud. Hort. Brit. 174. 1830. *Melastoma trinervia* Swartz, Prodr. 69. 1788. *Melastoma scorpioides* Schlecht. & Cham. Linnaea 5: 564. 1830. *Miconia scorpioides* Naudin, Ann. Sci. Nat. ser. 3, 16: 243. 1851.

Wet forests or thickets, at or little above sea level; Izabal. Southern Mexico; Nicaragua; Costa Rica. South America.

A large shrub or small tree, sometimes 6-8 meters high, the young branches strongly compressed and 2-edged, densely and very minutely paleaceous; leaves thick-membranaceous, usually blackening when dried, on stout petioles 1-1.5 cm. long, oblong or obovate-oblong, mostly 15-25 cm. long and 5-9 cm. broad, short-acuminate, acute at the base or contracted and long-decurrent on the petiole, often lustrous above, very minutely and sparsely lepidote-punctate or almost glabrous, sparsely and minutely lepidote beneath, appearing glabrous; panicles 15-25 cm. long, narrow, the branches short, opposite, often furcate, the flowers sessile, somewhat secund; hypanthium 2 mm. long, campanulate-hemispheric, very minutely stellate-lepidote, the sepals almost obsolete; petals rounded at the apex, 2.5 mm. long, white; style 6 mm. long; fruit broadly subglobose, slightly 10-costate, 5 mm. broad.

This widespread species has been quite universally referred to *Miconia scorpioides*, although Fawcett and Rendle (Journ. Bot. 64: 104. 1926) pointed out the correct name many years ago.

Miconia triplinervis Ruiz & Pavón, Syst. 1: 105. 1798. *M. angustispica* Blake, Contr. U. S. Nat. Herb. 24: 15, t. 5. 1922 (type from Quebradas, Izabal, *S. F. Blake* 8596).

Open forest, little above sea level; known in Guatemala only from the locality cited; Izabal. Mexico (Tabasco); British Honduras; Honduras; Costa Rica; Panama; Jamaica. Southward in South America to Peru.

A sparsely branched, slender shrub 2-3 meters tall, the branches obtusely tetragonous when young, covered with a close dense brown furfuraceous tomentum; leaves firm-membranaceous, on stout petioles 2 cm. long or shorter, broadly lanceolate or narrowly elliptic, mostly 15-25 cm. long and 5-12 cm. broad, abruptly long-acuminate, acute at the base and decurrent upon the petiole, entire, glabrous above, below thinly and minutely stellate-pubescent, densely pubescent on the nerves; inflorescence terminal and sometimes pseudolateral, spiciform, pedunculate, densely ferruginous-furfuraceous, 10-15 cm. long or even longer, remotely many-flowered, the flowers glomerate, sessile; hypanthium minutely brown-tomentulose, 2.5-3 mm. long; petals white, obovate, retuse, 2 mm. long; style very short; fruit turning red and finally black.

Called "*sirín*" in Honduras.

Miconia Tuerckheimii Cogn. in Donn.-Sm. Bot. Gaz. 16: 5. 1891. *Acinodendrum Tuerckheimii* Kuntze, Rev. Gen. 953. 1891.

Moist or wet forest, about 1,600 meters; endemic; Alta Verapaz (type from Pansamalá, *Tuerckheim* 581; collected also in the region of Cobán).

A shrub, the branches obtusely tetragonous, densely stellate-tomentose and sparsely glandular-hirsute, the panicles similarly pubescent; leaves thick and soft, narrowly ovate, on slender petioles 3–8 cm. long, the blades as much as 25 cm. long and 14 cm. broad, acuminate, rounded and shallowly emarginate at the base, 7-nerved, minutely denticulate, densely short-hispid on the upper surface and very rough to the touch, green beneath, densely and softly stellate-tomentose; panicles large and broad, as much as 25 cm. long, the branches spreading, opposite, the flowers pedicellate, the pedicels 1–3 mm. long; hypanthium 3 mm. long, stellate-tomentose and glandular-pilose; sepals very short; petals 3 mm. long; anthers yellow, 3 mm. long; ovary 4-celled, the style 4 mm. long; fruit subglobose, 5 mm. in diameter.

Apparently a rare species in Alta Verapaz, for we have not collected it, but we have not visited the type locality of Pansamalá.

MICONIA UMBILICATA (Bertol.) Triana, Trans. Linn. Soc. Bot. 28: 131. 1871. *Melastoma rostrata* Bertol. Fl. Guat. 416. 1840. Type from Escuintla, Velásquez. Although referred by Triana to *Miconia*, this plant, so far as one may judge by description, is probably *Conostegia xalapensis* (Bonpl.) D. Don, which is so abundant all along the Pacific lowlands that it would be hard to believe that Velásquez did not collect it.

Miconia virescens (Vahl) Triana, Trans. Linn. Soc. Bot. 28: 107. 1871. *Melastoma virescens* Vahl, Eclog. Amer. 3: 18. 1807.

Wet mixed forest, 1,500 meters; Alta Verapaz (near Tactic, *Standley* 70482). British Honduras; Panama. Northern South America.

A slender shrub or small tree as much as 7 meters high, reported to attain in Panama a height of 15 meters and a trunk diameter of 30 cm., the young branches and inflorescence covered with a minute, rather sparse, stellate-furfuraceous tomentum; leaves membranaceous, on slender petioles 1–2 cm. long, narrowly oblong-lanceolate, mostly 6–16 cm. long and 2–4.5 cm. broad, narrowly attenuate-acuminate, acute at the base, 3-nerved, denticulate or entire, sparsely stellate-puberulent on both surfaces with extremely minute hairs scarcely visible to the naked eye; panicles lax and many-flowered, divaricately branched, 3–6 cm. long, the flowers sessile or nearly so; hypanthium subglobose, 1.5 mm. long, sparsely and very minutely stellate-puberulent; petals white, rounded at the apex, 1.5–2 mm. long; style 3 mm. long, truncate at the apex; fruit globose, 2.5 mm. in diameter.

Miconia Zemurrayana Standl. & L. Wms. Ceiba 1: 42. 1950. *Tococa parvifolia* Donn.-Sm. Bot. Gaz. 27: 335. 1899, non *Miconia parvifolia* Cogn. (type from Santa Rosa, Heyde & Lux 6137).

Open pine forests or thickets, 600–1,500 meters; Zacapa; Chiquimula; Santa Rosa. El Salvador and Honduras.

Slender and attractive shrubs 0.5–2.5 meters tall, the branches purplish, glabrous except under surface of leaves; leaves linear-lanceolate to lanceolate, acuminate, rounded to the base, entire or serrulate, glabrous in age except for tufts of stellate pubescence in the axils of the nerves, blades 2–12 cm. long and 0.5–2.5 cm. broad, petioles slender, 0.3–2.5 cm. long; inflorescences terminal, short, few-flowered paniculate cymes to about 7 cm. long; flowers 5-merous, subtended by 2 filiform, early deciduous bracts; hypanthium narrowly campanulate, 4–6 mm. long, becoming globose in fruit; calyx lobes short, rounded, dorsal appendages filiform and 3–5 mm. long; petals obovate, obtuse, 6–12 mm. long, white; fruit juicy, blue-black at maturity, to 1 cm. long.

One of the more attractive shrubs of the open pine forest, perhaps worthy of cultivation. Called "*caldereta*" in Honduras.

MONOCHAETUM (A. P. De Candolle) Naudin

References: Alfred Cogniaux in DC., Monog. Phan. 7: 391–405. 1891; H. A. Gleason, The genus *Monochaetum* in North America, Am. Jour. Bot. 16: 586–594. 1929; L. Wms. Fieldiana, Bot. 29: 576–577. 1963.

Low herbs or shrubs, usually much branched, mostly pubescent; leaves short-petiolate, ovate or lanceolate, small, generally entire, 3–7-nerved; flowers 4-parted, medium-sized, mostly terminal, cymose or rarely solitary, usually few, pink, purple, or violaceous; hypanthium setose-pilose or villous, oblong-campanulate or tubular; sepals ovate or lanceolate, acute, equaling or shorter than the hypanthium, persistent or deciduous; petals obovate; stamens 8, biseriate, alternately unequal, the filaments glabrous; anthers dissimilar, elongate-linear or subulate, strongly inflexed, opening by a single terminal pore; anthers opposite the petals largest, subulate, arcuate, the connective not produced below the anther cells but prolonged posteriorly into a curved, short or elongate, often inflated, caudiform appendage; anthers alternate with the petals shorter, straighter, paler, often sterile, the connective more slender and longer; ovary adherent only at the base, subtetragonous, 4-celled, setose or villous at the apex; style filiform, the stigma punctiform; fruit capsular, equaling the calyx tube, 4-valvate; seeds numerous, arcuate or cochleate.

The separation of the species given below for Guatemala is not satisfactory. Even though we have reduced drastically the number of species credited to Central America there are perhaps still too many recognized.—Species probably fewer than 25, most numerous in South America, a few others in Mexico and southern Central America and Panama.

Pubescence of the stem sparse, ascending or appressed; hairs of the hypanthium and upper branches appressed, eglandular but obscurely barbellate.

M. Deppeanum.

Pubescence of the stem spreading; hairs of hypanthium chiefly gland-tipped, barbellate or not.

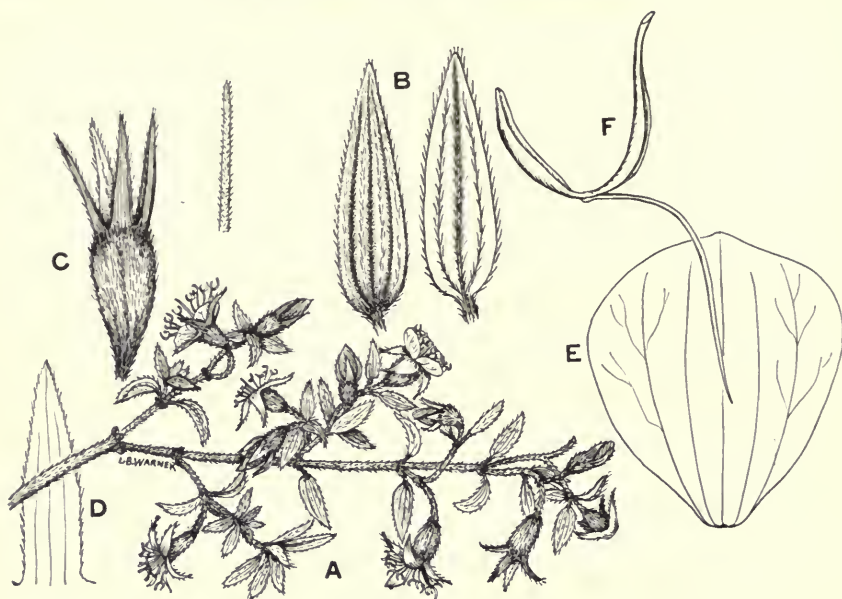


FIG. 76. *Monochaetum Deppeanum*. A, Habit; $\times 1$. B, Leaves, upper and lower surfaces; $\times 4$. C, Hypanthium and calyx; $\times 2\frac{1}{2}$. D, Sepal, inner surface; $\times 5$. E, Petal; $\times 5$. F, Stamen; $\times 5$.

Leaves mostly 5-plinerved, petioles to 1.5 cm.; hairs of hypanthium not barbellate.....*M. tenellum*.

Leaves mostly 3-plinerved, petioles usually less than 8 mm. long; hairs of hypanthium obscurely barbellate or not.....*M. floribundum*.

Monochaetum Deppeanum (Schlecht. & Cham.) Naudin, Ann. Sci. Nat. ser. 3, 4: 165. 1850. *Rhexia Deppeana* Schlecht. & Cham. Linnaea 5: 566. 1830.

Moist or wet banks, thickets and meadows, sometimes cinder or lava slopes; 900–3,000 meters; Guatemala; Chimaltenango; Totonicapán; Quiché; Quezaltenango; San Marcos; Huehuetenango. Southern Mexico; El Salvador; Nicaragua.

Shrubs or sometimes herbaceous, 1 meter or less tall, the branches strigose or pilose to glabrate, the hairs somewhat spreading to appressed; leaves linear-lanceolate to oblong-lanceolate, acute, entire, from acute to rounded at the base, short petiolate, strigose on both surfaces, triplinerved or with an additional and obscure outer pair, mostly about 15 mm. long and 4 mm. broad but from 5–35 mm. long and 1–6 mm. broad, usually paler beneath; inflorescence usually 1-flowered or sometimes several and cymose, borne in the axils of leaves; hypanthium campanulate to urceolate, mostly 5–6 mm. long, strigose; sepals linear-lanceolate to lanceolate, about as long as the hypanthium, somewhat strigose or ciliate to gla-

brous; larger anthers 5–6 mm. long, the appendages 3–4 mm. long and dilated distally; petals rose or purple.

An attractive plant when in prime condition but the petals soon fall and the plant becomes unattractive.

Monochaetum floribundum (Schlecht.) Naudin, Ann. Sci. Nat. ser. 3, 14: 165. 1850. *Rhexia floribunda* Schlecht. Linnaea 13: 431. 1839. *M. rivulare* Naudin, Ann. Sci. Nat. ser. 3, 4: 50. 1845. *M. diffusum* Cogn. in Donn.-Sm. Bot. Gaz. 16: 4. 1891 (type from Guatemala, *Donnell Smith* 2217). *M. diffusum* var. *eglandulosum* Cogn. in DC. Monog. Phan. 7: 395. 1891. *M. compressum* Gleason, Bull. Torr. Bot. Club 65: 577. 1938 (type from Volcán de Atitlán, *Skutch* 1516). *Hierba de lloradero; nitro blanco*.

Moist or wet thickets or forest or on open banks or along trails, 1,000–2,200 meters; Chiquimula; Zacapa; El Progreso; Baja Verapaz; Alta Verapaz; Guatemala; Zacatepéquez; Escuintla; Sololá; Quiché; probably in all the mountain departments. Southern Mexico to Panama, except British Honduras.

Shrubs, sometimes herbs, to 1 meter tall, densely or laxly branched, the branches covered with usually spreading yellowish hairs, or the hairs sometimes ascending and somewhat sparse; leaves linear-oblong or elliptic to ovate, acute or subacute, obtuse or cuneate to the base, 3–5-plinerved, strigose on both surfaces, often densely so, paler beneath, petioles to 8 mm. long but usually much less and the leaves nearly sessile, 0.8–6 cm. long and 0.2–1.4 cm. broad; inflorescence a simple few-flowered cyme or often many-flowered compound cymes, often with bract-like leaves, pilose or pilose-glandular, the hairs usually minutely barbellate; hypanthium narrowly campanulate, in fruit suburceolate, 4–8 mm. long, strigose or glandular-strigose; sepals 4, triangular-lanceolate or narrower, ciliate, acute or acuminate, often nearly glabrous on the back, 3–5 mm. long; petals obovate, pale pink to lavender, 7–12 mm. long; anther dimorphic, the antisepalous series largest, the smaller ones perhaps sometimes sterile.

A widespread species which has been much segmented. There is much variation in the leaves and in the pubescence of the leaves and stems, and there is some in the flowers but it seems impossible to recognize the several species maintained by Gleason.

Monochaetum tenellum Naudin, Ann. Sci. Nat. ser. 3, 14: 159. 1850. *Jazmín de montaña* (fide Aguilar).

Moist or wet, mountain thickets or in pine, oak, or *Cupressus* forest, often on shaded banks, 1,800–2,800 meters; probably endemic; reported from Baja Verapaz; Chimaltenango (type from Patzicía, *Savage*); Sololá; Quiché; Huehuetenango; Totonicapán; Quezaltenango; San Marcos.



FIG. 77. *Monochaetum tenellum*. A, Habit; $\times 1$. B, Flower dissected, petals removed; $\times 3$. C, Petal; $\times 2\frac{1}{2}$. D, Antisepalous and antipetalous stamens; $\times 3$.

A perennial herb, usually 30–50 cm. high, erect or decumbent, laxly branched, the branches slender, very sparsely hirtellous with spreading eglandular hairs, in age often glabrate; leaves on slender petioles 1–1.5 cm. long or usually shorter, oblong to ovate, 2–5 cm. long, acute or obtuse, rounded or obtuse at the base, 5-plinerved, entire, thinly strigose on both surfaces, slightly paler beneath; flowers long-pedicellate, mostly solitary or in 3-flowered cymes, the pedicels glandular-hirsute; hypanthium narrowly campanulate, 5–6 mm. long, glandular-hirsute; sepals 4–5 mm. long, lance-oblong, acuminate, glandular-ciliate; petals broadly obovate, 12–14 mm. long, rose-purple; larger anthers 7 mm. long, the smaller ones 4 mm. long.

This has been reported from Sololá as *M. calcaratum* (DC.) Triana, a Mexican species. It has been introduced into cultivation in

Europe, like some other species mentioned here. In December in the high mountains of the west of Guatemala it is often abundant on wet, shaded banks and is one of the most attractive plants to be found there.

MONOLENA Triana

Rather succulent, low, perennial herbs, acaulescent or nearly so, glabrous, with thick rhizomes; leaves of a pair very unequal, the smaller ones caducous, the larger ones long-petiolate, mostly ovate, entire or nearly so; flowers 5-parted, in scorpioid cymes terminating a long naked erect peduncle, large, pink, short-pedicellate; calyx and hypanthium glabrous, the hypanthium turbinate, trigonous; calyx lobes membranaceous, ovate, obtuse; petals obovate-spatulate, obtuse; stamens 10, alternately slightly unequal, the filaments glabrous; anthers linear-oblong, obtuse, minutely 1-pored at the apex; connective geniculate below the anther cells and long-produced, produced anteriorly into an ascending spatulate obtuse appendage, tuberculate posteriorly above the insertion of the filament; ovary more or less adnate, triquetrous, excavate at the apex; style stout, the stigma subcapitate; capsule broadly depressed-trigonus, 3-valvate; seeds obovoid-pyramidal, the hilum basal.

Five or six species, distributed from Guatemala to Colombia. One other species has been collected in Panama.

Monolena guatemalensis Donn.-Sm. Bot. Gaz. 42: 294. 1906.

Terrestrial or on mossy stumps in wet mixed forest, 1,350 meters or less; Alta Verapaz (type from Sepacuité, *O. F. Cook & R. F. Griggs* 106); Quiché.

Plants arising from long fleshy rhizomes 8-17 mm. thick, appearing glabrous but obscurely furfuraceous-puberulent on the scapes and lower leaf surface; leaves very thin when dried, on slender petioles 6-19 cm. long, cordate-ovate, 10-16 cm. long, 6-10 cm. broad, acuminate, rather deeply cordate at the base, 7-9-plinerved, slightly paler and often purplish beneath; scapes few, 14-20 cm. long, reddish or purple, the cymes 4-8-flowered, the very thick pedicels 2-3 mm. long; hypanthium in anthesis fleshy, 3 mm. long; calyx lobes membranaceous, ovate, 1.5 mm. long; fruiting calyx 5 mm. long, cartilaginous, reticulate-nerved; petals 23 mm. long, pink; capsule valves 3 mm. long; seeds scarcely 1 mm. long.

The flowers are large and rather showy.

MOURIRI Aublet

Trees or shrubs, usually glabrous throughout; leaves sessile or short-petiolate, 1-nerved, the secondary nerves and veins obscure or undulate, entire; flowers small; yellow, 4-5-parted, on bracteate pedicels arranged in small axillary cymes; hypanthium thick-walled, obconic to pyriform or funnelform; sepals usually coherent in bud, at anthesis separating almost or quite to the torus; petals ovate to

lanceolate, acute or acuminate; stamens isomorphic, the filaments glabrous, somewhat complanate; anthers stout, obtuse, the cells usually much shorter than the connective, opening by a lateral longitudinal slit; connective thickened toward the base, glandular dorsally, often prolonged into a short, dorsal or basal spur; ovary wholly inferior, 2-5-celled or 1-celled by disappearance of the septa; ovules few in each cell, collateral and ascending from near the base; style slender, elongate, the stigma punctiform; fruit baccate.

About 65 species in the genus, mostly in Amazonia. Three additional species are described from continental North America, two from Panama and one from Mexico. The genus is in need of revision and it is likely that the number of North American species will be reduced when this is done. Members of the genus are often mistaken for Myrtaceae. The genus does not resemble other American melastomes, either superficially or in wood structure. In the Melastomaceae the genus is easily recognized by the 1-nerved leaves, the reduced numbers of seeds in the fruit, and the completely inferior ovary.

Leaves sessile.

Leaves mostly 5-7.5 cm. broad, conspicuously amplexicaul . . . *M. Steyermarkii*.

Leaves 2-3 cm. broad, not amplexicaul *M. parvifolia*.

Leaves short-petiolate.

Leaf blades acute or subacute at the base, sometimes obtuse but not rounded. *M. exilis*.

Leaf blades rounded at the base, sometimes emarginate.

Leaves 3-3.5 cm. broad, the lateral nerves obsolete or nearly so; peduncles in fruit 2-4 mm. long, the pedicels mostly 5-8 mm. long . . . *M. Gleasoniana*.

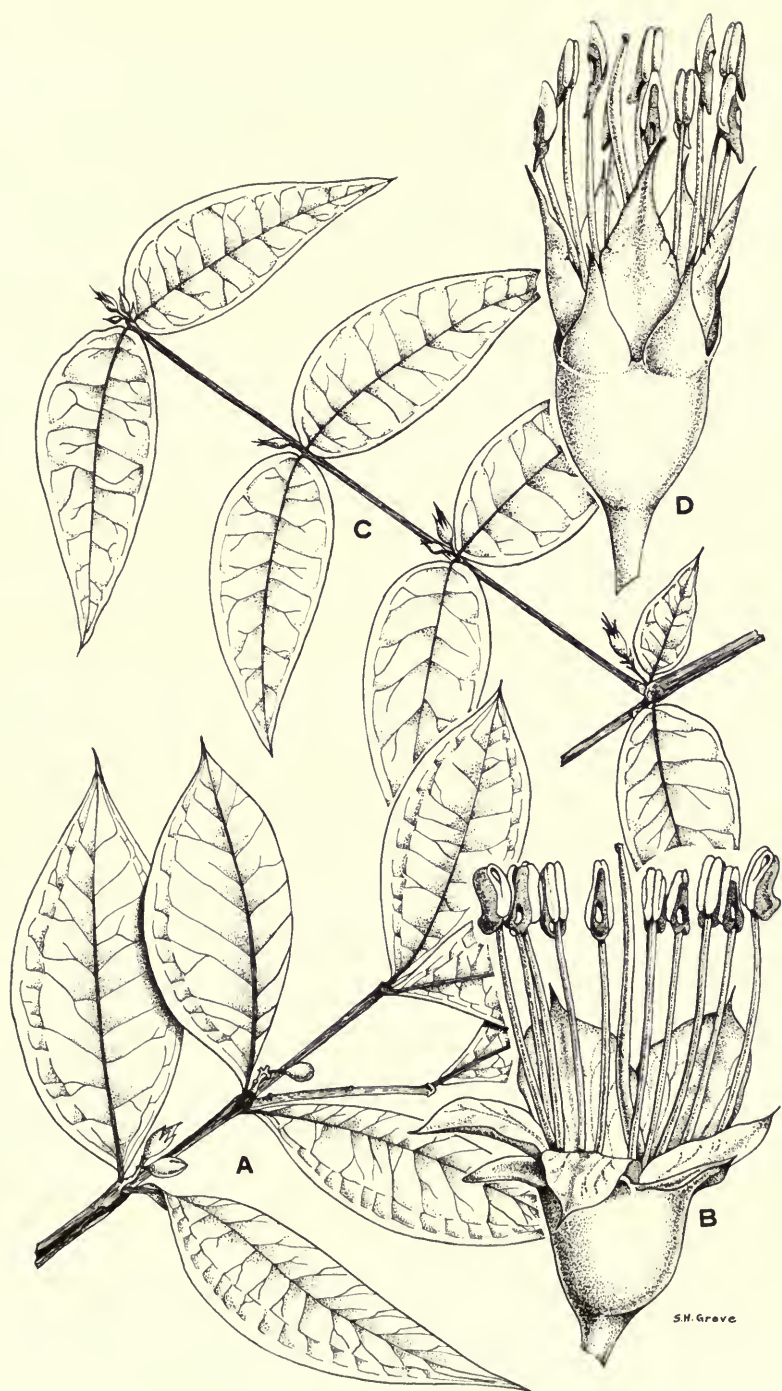
Leaves 4.5-6.5 cm. broad, the lateral nerves conspicuous; peduncles in fruit about 20 mm. long, the pedicels about 6 mm. long *M. cyphocarpa*.

Mouriri cyphocarpa Standl. Trop. Woods 7: 7. 1926.

Known in Guatemala with certainty only from the type, Los Andes region, lower Motagua Valley, Izabal, little above sea level, *S. J. Record* 12.

A medium-sized tree, glabrous almost throughout; branchlets brown, terete; leaves on stout petioles 3 mm. long, lance-oblong or narrowly elliptic-oblong, 10-17 cm. long, 4.5-6.5 cm. broad, abruptly short-acuminate, rounded and usually emarginate at the base, dark green above, much paler beneath, with about 15 pairs of straight lateral nerves, these anastomosing close to the margin; fruiting peduncles 2 cm. long, glabrous, bearing 2 or more flowers, the fruiting pedicels 6 mm. long, finely brown-tomentulose; fruit subglobose, asymmetric, 1.5 cm. in diameter, covered (like the broad persistent calyx lobes) with a fine dense ferrugi-

FIG. 78. *Mouriri exilis*. A, Habit; $\times \frac{1}{2}$. B, Flower; $\times 2\frac{1}{2}$. *Mouriri parvifolia*. C, Habit; $\times 1$. D, Flower; $\times 7\frac{1}{2}$.



nous tomentum; ovary apparently 4-celled but 2 of the cells abortive, the fertile ones 1-seeded; seeds irregularly semiglobose, 8–11 mm. in greatest diameter, dark brown, lustrous.

Mouriri exilis Gleason, Carnegie Inst. Wash. Publ. 522: 370. 1940.

Wet, mixed, lowland forest, 300 meters or less; Alta Verapaz; Izabal. British Honduras.

A tree, sometimes 10 meters high with a trunk 25 cm. in diameter, the branches stout, grayish; leaves on stout petioles 2–4 mm. long, coriaceous, narrowly oblong or elliptic, 8–17 cm. long, 3–7 cm. broad, acute or short-acuminate, usually acute or subacute at the base, slightly paler beneath, the lateral nerves obvious, uneven, inconspicuous; flowers in clusters of 3–6, the peduncles 2 mm. long, the pedicels 3 mm. long; hypanthium obconic, 4.5–5 mm. long; sepals broadly quadrate-ovate, 2.5 mm. long; petals ovate, acute, 5 mm. long, white, tipped or tinged with pink; anthers 3.5 mm. long; style as much as 16 mm. long; fruit depressed-globose, 1.5 cm. in diameter or probably even larger.

Known in British Honduras by the names “jug” and “*cacho de venado hembra*.”

Mouriri Gleasoniana Standl. Field Mus. Bot. 22: 361. 1940.

Wet forest along bluffs at sea level; Izabal (Río Dulce west of Livingston, *Steiermark* 39525). Mexico (Tabasco; Oaxaca). British Honduras.

A shrub or a tree 5–12 meters tall, glabrous except perhaps on the flowers, the branchlets slender but stiff, cinnamon-brown, subterete; leaves coriaceous, on stout petioles 3 mm. long, oblong or lance-oblong, 7.5–10 cm. long, 3–3.5 cm. broad, rather abruptly acute or short-acuminate, rounded at the base, the lateral nerves numerous, very slender, obscure; peduncles axillary, mostly solitary, in fruit 2–4 mm. long, the pedicels 5–8 mm. long, minutely puberulent or glabrate, slender; calyx 5–6 mm. broad, sparsely puberulent or almost glabrous, the hypanthium rounded at the base; fruit depressed-globose and often didymous, glabrous, 13–14 mm. broad; seeds 1–3.

Called “*frutillo*” in Oaxaca. The crown is spreading, the trunk straight and round, as much as 25 cm. in diameter; fruit yellow before maturity, reddish when ripe. The wood is said to be used in Oaxaca for railroad ties.—Doubtfully distinct from *M. exilis*.

Mouriri parvifolia Benth. Bot. Voy. Sulph. 97, t. 36. 1845. *Cacho de venado*, *cuerno de venado*, *chicharillo* (Petén).

Moist or wet forest, on plains or hillsides, at or little above sea level; Petén; Alta Verapaz. Southern Mexico; British Honduras to El Salvador and Panama. Southward to Bolivia.

A large shrub or a small tree, glabrous throughout, the branches slender; leaves thick-membranaceous, sessile, lanceolate or ovate-lanceolate, mostly 3–7 cm. long, acute or acuminate, rounded or emarginate at the base, 1-nerved, the lateral nerves very obscure or obsolete, concolorous; flowers few in the leaf axils, the pedicels 2–4 mm. long; hypanthium campanulate, 2.5–3 mm. long; sepals triangular, apiculate, equaling the hypanthium; petals ovate, acuminate, 5–6 mm. long, white; anthers 2–2.5 mm. long; ovules about 8; style 11–12 mm. long; fruit globose, 6–7 mm. in diameter.

Known in British Honduras as “jug,” “half-crown,” “turtle bone,” “blossomberry jug;” “*isna*” (Honduras); “*camarón*,” “*capulín verde*” (El Salvador); “*viushi*” (Oaxaca). The wood is brown or reddish brown, very hard, heavy, tough, often with irregular grain, difficult to work, durable in contact with the ground. No use is made of it in Central America, so far as we know.

Mouriri Steyermarkii Standl. Field Mus. Bot. 22: 257. 1940.

Known only from the type, Izabal, Río Dulce, on the north side above Livingston, at sea level, *Steyermark* 39446.

A tree, glabrous except for the flowers, the branches slender but stiff, terete; leaves closely sessile, coriaceous, oblong-ovate, 10–17 cm. long, 5–7.5 cm. broad, acuminate, rounded and shallowly cordate at the broad base, somewhat paler beneath, the lateral nerves obscure beneath but evident above; flowers cymose, terminal, the cymes sessile, few-flowered, 2 cm. long, the peduncles and pedicels minutely puberulent, the pedicels 5 mm. long or less; hypanthium campanulate, 7 mm. long, subacute at the base, minutely puberulent; sepals short, broadly rounded; petals in bud 6 mm. long, whitish, obtuse or rounded at the apex.

NEPSERA Naudin

Erect herbs, probably annual, abundantly and widely branched, pubescent or glabrate; leaves short-petiolate, basi-nerved; flowers small, 4-parted, very numerous, long-pedicellate, in large broad panicles; hypanthium campanulate or subglobose; sepals triangular, about equaling the hypanthium, acuminate, persistent; petals ovate or ovate-lanceolate, white or pink, acute; stamens isomorphic, slightly unequal in size; anthers linear or subulate, the connective barely prolonged below the cells, these bearing 2 slender, erect, anterior appendages; ovary free, 3-celled, glabrous; style straight, slender, the stigma punctiform; fruit capsular, 3-valvate; seeds semiovoid, cochleate, tuberculate.

The genus consists of a single species.

Nepsera aquatica (Aubl.) Naudin, Ann. Sci. Nat. ser. 3, 13: 28. 1849. *Melastoma aquatica* Aubl. Pl. Guian. 430. 1775.

Wet mixed forest or thickets, at or near sea level; Izabal. British Honduras; Nicaragua; Costa Rica; Panama; West Indies; tropical South America.

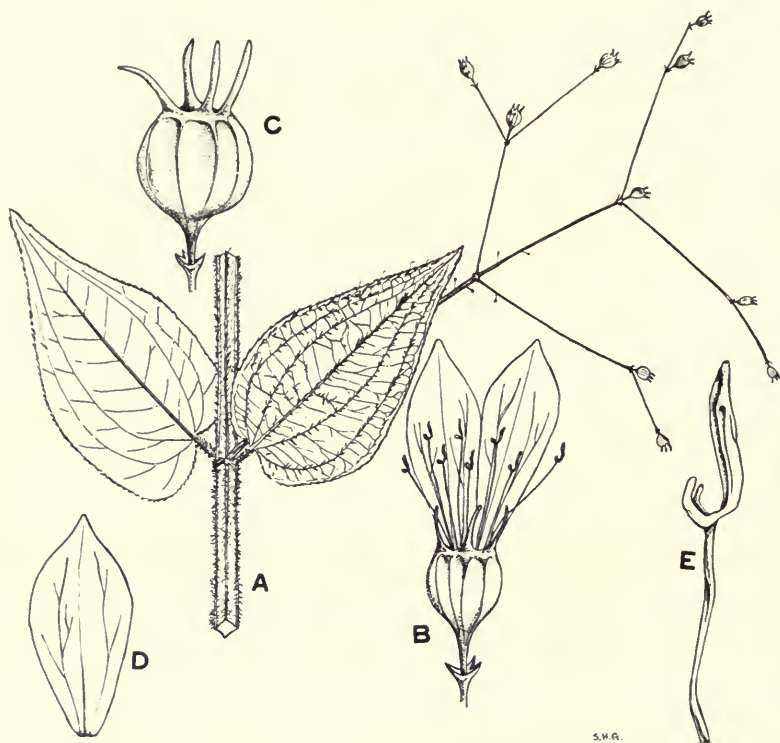


FIG. 79. *Nepsera aquatica*. A, Habit; $\times 1$. B, Flower with some petals removed; $\times 5$. C, Hypanthium and calyx; $\times 5$. D, Petal; $\times 5$. E, Stamen; $\times 5$.

Plants slender, erect, a meter high or less, the stems dark brown, somewhat quadrangular, glabrous or hirtellous; leaves on slender petioles 5–10 mm. long, thin, ovate or lance-ovate, 2–6 cm. long, acute or acuminate, rounded or subcordate at the base, minutely serrulate, 5–7-nerved, glabrous or somewhat hirtellous beneath; panicles 10–40 cm. long, the pedicels mostly 1.5–2.5 cm. long, very slender; hypanthium in fruit 3 mm. long, the narrow sepals somewhat shorter; petals 5–7 mm. long.

An infrequent plant in Central America and in Panama. Of it Gleason remarks “perhaps introduced into North America,” but from experience with it this seems highly improbable and there is, in fact, not the slightest reason for such an assumption.

OSSAEA De Candolle

Shrubs or small trees, pubescent or glabrous, the branches subterete, mostly slender; leaves petiolate, usually thin, 3–7-nerved or -plinerved, entire or denticu-

late; flowers mostly 5-parted, small or very small, in general axillary, often fasciculate cymes or panicles, mostly white or pink; hypanthium urceolate, subglobose, or campanulate; calyx tube more or less prolonged, the sepals depressed or obsolete; exterior teeth tuberculiform, conic, or subulate, often conspicuous; petals ovate or lanceolate, acute or acuminate, usually with a distinct exterior tooth, often cucullate or inflexed at the apex; stamens isomorphic, the filaments slender, glabrous; anthers linear or oblong, sometimes 2-pored, the connective simple or short-prolonged below the insertion of the filament into a dorsal appendage; ovary inferior, 3-5-celled; style filiform, the stigma punctiform or capitellate; fruit baccate; seeds angular, pyramidal, or obovoid.

About 100 species, in tropical America. A few others are found in southern Central America. The genus is highly developed in the West Indies.

Exterior calyx teeth minute or obsolete; flowers in small, divaricately branched panicles. *O. micrantha*.

Exterior calyx teeth subulate, 1.3 mm. long, conspicuous; inflorescences small, dense, congested. *O. trichocalyx*.

Ossaea micrantha (Swartz) Macfadyen, Fl. Jam. 2: 49. 1850.
Melastoma micrantha Swartz, Prodr. Fl. Ind. Occ. 71. 1788. *Cinco negritos* (San Marcos).

Mostly in dense wet mixed forest, sometimes in thickets or second growth, 2,100 meters or less; Alta Verapaz; Izabal; Escuintla; Suchitepéquez; Sololá; Quezaltenango; San Marcos; Huehuetenango. Mexico (Chiapas); British Honduras along the Atlantic coast to Panama; Jamaica; northwestern and western South America.

A slender shrub or tree 1.5-6 meters high, the young branchlets sparsely and minutely furfuraceous or practically glabrous; leaves on slender petioles 1.5-3 cm. long, thin, narrowly oblong-elliptic, mostly 10-16 cm. long, long-acuminate or cuspidate-acuminate, cuneate at the base, 3-plinerved and often with a pair of additional obscure nerves close to the margin, entire or nearly so, practically glabrous; panicles axillary, lax, divaricately branched, 2-4 cm. long, the flowers numerous, 4-parted, apparently on pedicels 2-5 mm. long but really sessile and minutely bracteate; hypanthium globose, 2 mm. long; calyx tube very short, the sepals obsolete, the exterior teeth minute and tuberculiform or obsolete; petals lanceolate, 3-4 mm. long, white; anthers 2 mm. long; style 4 mm. long; fruiting hypanthium conspicuously 8-costate when dry; fruit white, juicy.

The pure white, very juicy, fresh fruits have a flavor much like that of black pepper.

Ossaea trichocalyx Pittier, Jour. Wash. Acad. Sci. 13: 391. 1923.

Moist or wet, mixed, lowland forest, 350 meters or less; Alta Verapaz; Izabal. British Honduras, along the Atlantic coast to Panama. Southward to Ecuador.

A shrub of 1–2.5 meters, sparsely branched, the branches slender or stout, densely and minutely brown-furfuraceous; leaves thin, on slender petioles 1–4 cm. long, ovate-lanceolate to narrowly oblong or ovate-elliptic, 10–23 cm. long, 4–11 cm. broad, rather abruptly long-acuminate, contracted and decurrent at the base, 5–7-plinerved, entire or nearly so, glabrous above, minutely and sparsely furfuraceous beneath; flowers 4-parted, short-pedicellate, crowded in dense clusters 1–1.5 cm. broad at mostly leafless nodes; hypanthium urceolate, 2.5 mm. long, minutely furfuraceous; outer calyx teeth subulate, spreading, 1.3 mm. long, tipped with a few glandular hairs; petals ovate-oblong, white, 1.5 mm. long, cucullate and incurved; anthers linear, 1.2 mm. long; berries small, bright blue or lavender.

The shrub is often weak and with decumbent or even reclining stems, and with usually only a few branches.

PTEROLEPIS (A. P. De Candolle) Miquel

Erect, branched or subsimple, annual or perennial herbs, usually hispid or hirsute; leaves small, ovate to linear; flowers small, 4-parted, cymose or glomerate, sessile or subsessile, pink or white; hypanthium campanulate, often 4-costate, pubescent with simple, branched, or gland-tipped hairs; sepals erect, triangular, ciliate, persistent and coriaceous in fruit; petals small, obovate; stamens dimorphic, the anthers subulate to ovoid or obovoid, the connective more or less prolonged below the cells, terminating in 2 small anterior lobes or appendages; ovary free, 4-celled, crowned with a circle of stiff erect setae surrounding the base of the slender style; stigma small, capitate; fruit capsular, 4-valvate; seeds minutely tuberculate.

Species about 30, mostly in South America. One or perhaps two other species are known from Central America.

Anthers broadest below the middle, the connective distinctly prolonged below the cells; leaves lanceolate to oval or ovate. *P. pumila*.

Anthers broadest above the middle, the connective barely prolonged below the cells; leaves narrowly linear-lanceolate. *P. stenophylla*.

Pterolepis pumila (Bonpl.) Cogn. in Mart. Fl. Bras. 14, pt. 3: 263. 1885. *Rhexia pumila* Bonpl. Rhex. t. 35. 1823. *P. exigua* Triana, Trans. Linn. Soc. Bot. 28: 39. 1871. *Hierba del duende* (fide Aguilar).

Moist or wet savannas or on grassy plains or hillsides, sometimes in open pine forest, 1,000 meters or less; Petén; Zacapa; Jalapa; Jutiapa; Santa Rosa; Escuintla; Suchitepéquez; Retalhuleu(?). Southern Mexico; Central America; Panama. Northern South America.

Plants annual or perhaps also perennial, 10–50 cm. high, simple or branched, sparsely leafy, the stems strigose, especially on the angles; leaves membranaceous, on petioles 1–5 mm. long, lanceolate to ovate, 2–5 cm. long, 5–20 mm. broad, acute or acuminate, rounded or obtuse at the base, 3–5-nerved, rather densely strigose-hirsute; flowers few or numerous at the ends of the stem and its branches,

often appearing lateral by proliferation; hypanthium 3–3.5 mm. long, pilose to pilose-glandular, some of the hairs stipitate-stellate; petals pink, 4–5 mm. long, glandular-ciliate; larger anthers 1–2 mm. long; fruiting hypanthium 5 mm. long.

Pterolepis pumila has been reported from Petén as *P. trichotoma* (Rottb.) Cogn. and, in fact, the two species are impossible to tell apart when anthers are lacking. The episepalous anthers of our species are mostly less than 2 mm. long and oblong while those of *P. trichotoma* are mostly more than 3 mm. long and subulate or linear-subulate—not very impressive differences.

Pterolepis stenophylla Gleason, Papers Mich. Acad. Sci. 17: 146, t. 20. 1933.

Moist or wet savannas or grassy pine forest, at or little above sea level; British Honduras (type from British Honduras, Bartlett 11378). Mexico (Veracruz).

Plants erect, 15–50 cm. high, simple or branched, annual or perennial, stems very narrowly 4-winged, strigose; leaves on petioles 1–2 mm. long, narrowly lanceolate or lance-linear, 30 mm. long and 5 mm. broad or smaller, acute, cuneate at the base, 3-nerved, rather densely strigose; flowers numerous, crowded, sessile or on pedicels 1–2 mm. long; hypanthium campanulate, stellate-hirsute; sepals triangular, equaling the hypanthium; petals 5 mm. long, deep rose or whitish; episepalous anthers oblong, obtuse, 1.5 mm. long.

This has been reported from British Honduras as *P. pumila* and as *P. trichotoma* (Rottb.) Cogn., and it is in fact not very distinct from *P. pumila*.

RHYNCHANThERA De Candolle

Reference: Louis O. Williams, Fieldiana, Bot. 29: 577–579. 1963.

Shrubs or annual or perennial herbs, variously pubescent; leaves petiolate, ovate or oblong; flowers mostly large and showy, 5-parted, pink or purple; hypanthium setose, hispid, or glandular-pilose, ovoid to oblong or campanulate; sepals subulate to lanceolate or setaceous, usually equaling the hypanthium, persistent; petals obovate; stamens 10, very unequal, the 5 larger ones fertile and alternate with the petals, the 5 smaller ones abortive, opposite the petals; larger anthers equal or one much larger than the others, usually terminated by a slender elongate 1-pored beak, the connective long-produced below the anther cells, anteriorly at the insertion of the filament tuberculate and bidenticulate or rarely not appendaged; smaller stamens usually reduced to a filament, rarely antheriferous; ovary free, usually 3-celled, glabrous or rarely hirsute at the apex; style filiform, declinate, the stigma punctiform; fruit capsular, subglobose, commonly loculicidally 3-valvate at the apex; seeds ovoid or oblong, straight or curved, sometimes subrostrate, foveolate, the hilum basal.

About 40 species in tropical America, mostly in South America. One other species is found in Mexico and still another is known from Costa Rica and Panama.

Petioles and upper surface of the leaves glabrous.....*R. medialis*.
 Petioles and upper surface of the leaves pubescent.....*R. grandiflora*.

Rhynchanthera grandiflora (Aubl.) A. DC. Prodr. 3: 107. 1828. *Melastoma grandiflora* Aubl. Pl. Guian. 1: 414, t. 160. 1775.

Wet lowland savannas or open swamps. To be expected in Petén and Izabal. Mexico; Costa Rica; Panama. Northern South America.

Small herbaceous or suffruticose plants to 4 dm. or perhaps more, and stems somewhat quadrate, sparsely short spreading glandular-pubescent; leaves elliptic to broadly elliptic-lanceolate, acuminate, acute to broadly cuneate at the base, 5-plinerved or sometimes with an additional but obscure pair, pilose-pubescent on both surfaces, that above appressed, that below somewhat spreading, sometimes glandular, blade 2.5–8 cm. long and 0.7–4 cm. broad, reduced upward, petiole glandular-pubescent and 1–4 cm. long; inflorescence consisting of single flowers or few-flowered cymes borne in the axils of the upper reduced leaves; hypanthium urceolate, spreading glandular-pubescent, about 5–8 mm. long and 3–5 mm. broad; sepals linear or linear-lanceolate, aristate, glandular-pubescent and ciliate, to 10 mm. long and 1.5 mm. broad in flower; petals narrowly obovate, obtuse or rounded at the apex, eciliate, 2–3 cm. long and 1–1.5 cm. broad; stamens 10, 5 sterile and filamentose, 5 normal of which 4 are similar and one with a much longer, thicker reflexed connective; 4 normal stamens about 25 mm. long and in anthesis more or less straight, the filament about 10 mm. long, the connective about 5 mm. long with two small auricles at the base on the ventral side; anther about 10 mm. long the theca being about 7 mm. long and the narrow and tubular rostrate apex about 3 mm. long, the pore terminal, inclined toward the ventral side and the opening somewhat enlarged and hooded; large stamen strongly deflexed at the junction of the filament and the connective, about 40 mm. long, filament somewhat broader than on other stamens, about the same length, the connective curved, broader and thicker upward, the basal auricles much reduced, the anther similar to those of other stamens but slightly larger.

Rhynchanthera medialis Standl. & Steyererm. Field Mus. Bot. 23: 137. 1944.

Known only from the type, San Marcos, along Quebrada Suchaté, between Canjulá and La Unión Juárez, near the Mexican boundary, 2,000–3,000 meters, *Steyermark* 36386.

A shrub or a suffrutescent herb, branched, the branches rather slender, terete, glabrous; leaves membranaceous, on slender petioles 1–2 cm. long, often bearing in their axils very small, short-petiolate leaves 1 cm. long; leaf blades oblong-ovate, 6–7.5 cm. long, 2.5–3.5 cm. broad, acuminate or long-acuminate, narrowly rounded and shallowly cordate at the base, 5-plinerved, subentire, glabrous above,

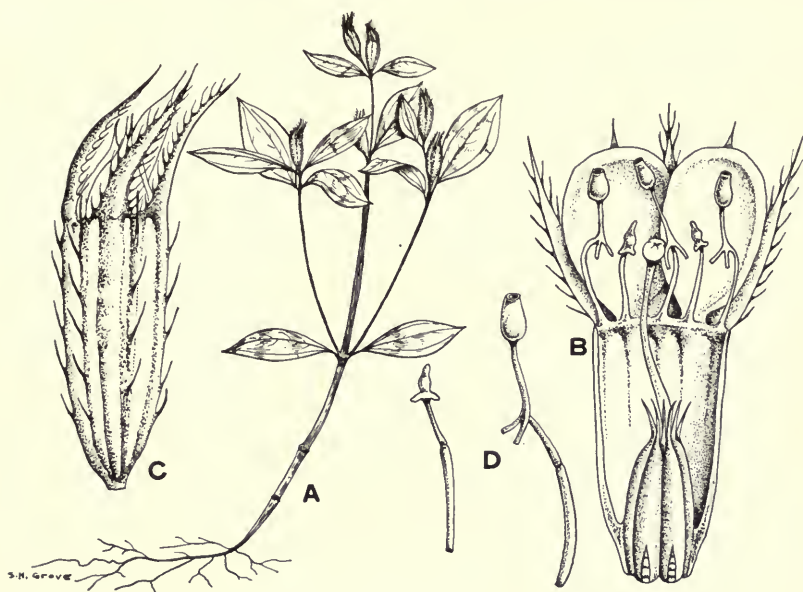


FIG. 80. *Schwackaea cuphioides*. A, Habit; $\times \frac{1}{2}$. B, Flower, partly dissected (after Miss Drake); $\times 5$. C, Hypanthium and calyx; $\times 5$. D, Stamens; $\times \pm 10$.

glabrous beneath except along the nerves near the base, there sparsely whitish-barbate; inflorescences borne in the forks of the branches, to 9 cm. broad, many-flowered; capsules glabrous, borne on stout pedicels 1 cm. long or shorter; hypanthium in fruit campanulate, glabrous, 7–8 mm. long; sepals in fruit recurved, linear, acute, 3 mm. long; seeds cuneiform, 1.2 mm. long.

Known only from unsatisfactory fruiting material. It is questionable that the species belongs in *Rhynchanthera*. The type of inflorescence occurs in no other species of this genus.

SCHWACKAEA Cogniaux

Erect annual herbs, trichotomously branched, the branchlets tetragonus; leaves membranaceous, ovate-lanceolate, entire, 3-nerved; flowers small, 4-parted, terminal and in the forks of the branches, arranged in leafy cymes or rarely solitary, subsessile; hypanthium glabrous, narrowly oblong, with 8 thick vertical wings or costae, these echinate-tuberculate dorsally; sepals linear-subulate, pectinate-ciliate, elongate, persistent; petals obovate, eciliate, setulose-apiculate; stamens 8, alternately unequal, the filaments glabrous; anthers all similar, minute, ovoid, straight, dehiscent by a single pore; connective of the larger anthers long-produced below the cells, arcuate, porrect beyond the insertion of the filament and deeply bilobate; connective of the smaller anthers very shortly produced, entire at the base; ovary adherent almost to the apex, oblong, 4-celled, bearing a

few rigid setae at the apex; style clavate, the stigma broadly truncate; capsule 4-valvate; seeds numerous, cochleate, minute, minutely roughened.

The genus consists of a single species.

Schwackaea cuphioides (Benth.) Cogn. in Durand, Ind. Gen. Phan. 132. 1888. *Heeria cupheoides* Benth. Bot. Voy. Sulph. 93, t. 33. 1844. *Acisanthera simplex* Brandegees, Univ. Calif. Publ. Bot. 6: 57. 1914 [type from Mexico (Chiapas)]. *Hierba del clavo* (fide Aguilar).

Wet or moist, shaded banks or open fields, sometimes in thickets, 500–1,400 meters; Chiquimula; Santa Rosa; Escuintla; Sacatepéquez. Southern Mexico; El Salvador to Panama; Colombia.

Plants erect, mostly 15–40 cm. high, sparsely branched, the stems usually red, setulose at the nodes and sometimes along the angles, elsewhere glabrous or nearly so; leaves short-petiolate, thin, ovate to elliptic or oblong, 1–6 cm. long, acute, setulose or pilose, especially above, somewhat paler beneath and often glabrate; hypanthium 5–7 mm. long, sparsely pilose or glandular-pilose or glabrous; sepals erect, rigid, 3 mm. long, conspicuously pectinate-ciliate; petals rose-pink, 6–7 mm. long; capsule 6–7 mm. long.

An inconspicuous weedy plant, frequent in many parts of Central America, chiefly on the Pacific slope, sometimes growing in wet savannas. The names “*sulfato*” and “*sulfatillo*” are given to it in El Salvador.

TIBOUCHINA Aublet

Herbs, shrubs, or sometimes trees; leaves small or large, petiolate, ovate or oblong, 3–7-nerved; flowers usually 5-parted (4–8), small or large, generally in trichotomous panicles, purple, pink, violaceous, or white; hypanthium variously pubescent, oblong or cylindric to urceolate or campanulate; sepals subulate to lanceolate or oblong, usually equaling or longer than the hypanthium, persistent or deciduous; petals obovate, entire or retuse, usually ciliate; stamens twice as many as the petals, subequal or usually alternately unequal, the filaments glabrous or pubescent; anthers all uniform or nearly so, linear-subulate or rarely oblong and truncate, dehiscent by a single pore, arcuate or sigmoid; connective variously produced below the anther cells, anteriorly bituberculate or bilobate, usually not appendaged; ovary free or adherent, hispid or setose at the apex, generally 5-celled; style filiform, arcuate or sigmoid, glabrous or pilose, the stigma punctiform; fruit capsular, usually 5-valvate, surrounded by the persistent calyx tube and hypanthium; seeds numerous, cochleate, densely and minutely tuberculate.

Some 200 species described, mostly South American. Two or three additional species are known in southern Central America and perhaps a half dozen more are to be found in Mexico. Some of the South American species are noteworthy for their large showy and

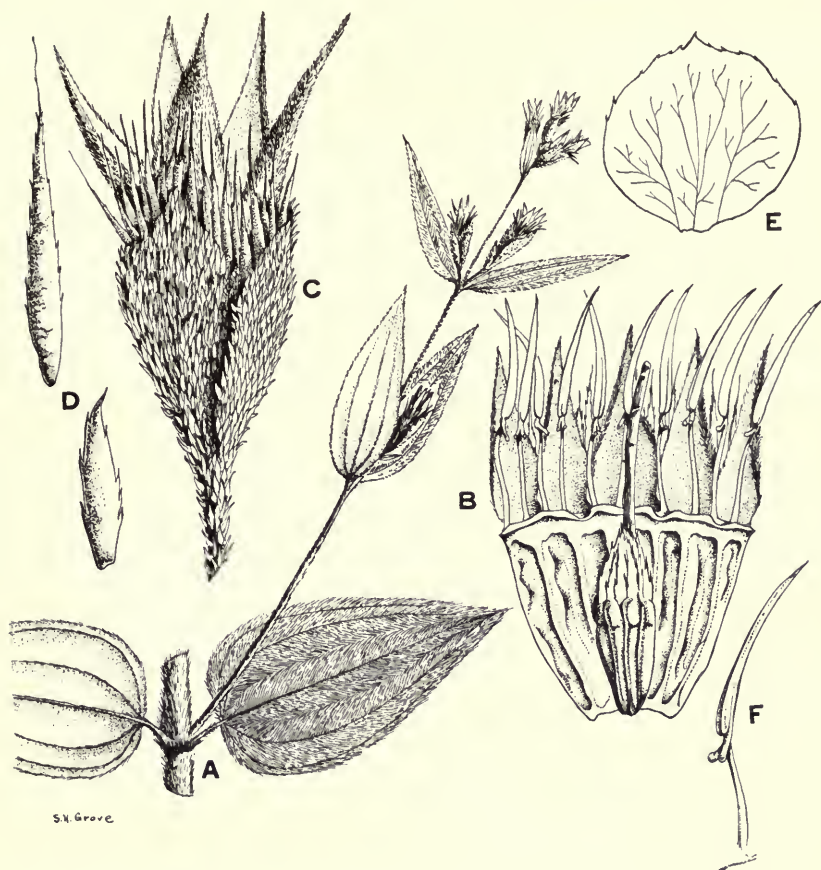


FIG. 81. *Tibouchina aspera*. A, Habit; $\times 1$. B, Flower, partly dissected; $\times 3$. C, Bracts, hypanthium and calyx; $\times 5$. D, Scales from bracts and hypanthium; $\times 10$. E, Petal; $\times 3\frac{1}{2}$. F, Stamen; $\times 4$.

handsome flowers. One of these species, perhaps *T. semidecandra* (Schlecht. & Mart.) Cogn., is cultivated in Guatemala.

Hypanthium covered with flattened, lanceolate scales. *T. aspera*.

Hypanthium with essentially round strigose or pilose hairs.

Sepals narrowly spatulate.

Pubescence of the stem spreading. *T. longisepala* var. *spathulata*.

Pubescence of the stem appressed. *T. longisepala*.

Sepals linear or lance-linear. *T. longifolia*.

Tibouchina aspera Aubl. Pl. Guian. 1: 446, *t.* 177. 1775. *T. belizensis* Lundell, Am. Midl. Nat. 29: 483. 1943 (type from British Honduras, Gentle 4155). *Small leaf sirin*.

Open woods. British Honduras. The Guianas and Venezuela south to Peru and Brazil.

A low shrub with erect branches, the branchlets white at first, becoming brown, covered with small appressed lacerate-lanceolate scales; leaves on petioles 2-4 mm. long, coriaceous, yellowish, ovate or oblong-ovate, 2-4.5 cm. long, 1-3 cm. broad, acute, rounded or subcordate at the base, 3-5-nerved, setulose on both surfaces, the nerves and margin squamose-furfuraceous beneath; flowers solitary or glomerate, 5-parted, usually in open terminal leafy panicles; calyx subtended by an involucre of 2 pairs of united bracts; hypanthium 7 mm. long, covered outside with white, imbricate, narrowly lanceolate scales as much as 4 mm. long, the scales lacerate, cuspidate; sepals ovate, attenuate, 7 mm. long, filiform-cuspidate; petals pink, obovate, 15 mm. long; stamens subequal, glabrous, the filaments 1 cm. long; ovary appressed-scaly at the apex; style 15 mm. long.

Tibouchina longifolia (Vahl) Baill. *Adansonia* 12: 74. 1877; L. Wms. *Fieldiana*, Bot. 29: 580. 1963. *Rhexia longifolia* Vahl, *Eclog. Amer.* 1: 39. 1796. *T. Bourgaeana* Cogn. in DC. *Monog. Phan.* 7: 264. 1891. *T. aliena* Brandegee, *Univ. Cal. Publ. Bot.* 6: 58. 1914.

Wet to dry thickets or open forest, often in pine-oak forest, sometimes in open or old fields, often in second growth, sometimes on brushy, rocky hillsides, 150-2,000 meters; Alta Verapaz; Baja Verapaz; El Progreso; Izabal; Zacapa; Santa Rosa; Escuintla; Guatemala; Suchitepéquez; Retalhuleu; Quezaltenango; San Marcos. Southern Mexico and British Honduras through Central America and Panama. Southward to Bolivia.

Erect or ascending herbs or shrubs mostly less than 1.5 meters tall, usually much branched, usually herbaceous but sometimes suffrutescent; branches strigose, often densely so, with appressed or spreading hairs; leaves narrowly lanceolate to lanceolate or oblong-lanceolate, acute or acuminate, acute or obtuse at the base, 4-10 cm. long, 3 cm. or usually less broad, 5-plinerved, densely appressed-pilose on both surfaces (rarely the hairs somewhat spreading below), obscurely serrulate, petioles slender, usually less than 20 mm. long; inflorescence usually few-flowered cymes borne in the axils of the upper leaves, sometimes rather diffuse many-flowered cymose panicles; hypanthium hirsute, the hairs appressed or sometimes spreading, 2.5-5 mm. (to 8 mm. in fruit) long; calyx lobes linear to lance-linear, rarely somewhat broader, 3-15 mm. long, hirsute outside, glabrous within; petals 5-15 mm. long, white or pink, ciliate or serrulate-ciliate; style mostly 5-10 mm. long.

Called "*talchinol*" in El Salvador, a word of Nahuatl origin.—There are included here the Central American specimens which have been determined as *T. Schiedeana* (Cham. & Schlecht.) Cogn. (in DC. *Monog. Phan.* 7: 261. 1891) and *T. Naudiniana* (Dcne.) Cogn.



FIG. 82. *Tibouchina longisepala* var. *spathulata*. A, Habit; $\times 1$. B, Leaf cut to show both sides; $\times 2$. C, Hypanthium and calyx; $\times 4$. D, Calyx; $\times 1$.

(l.c. 264) without passing on the validity of those specific names, which were based on Mexican material.

Tibouchina longisepala Cogn. in DC. Monog. Phan. 7: 259. 1891.

Moist to wet or dry, brushy, often rocky hillsides, sometimes on cliffs or in wet forest, 1,200–2,500 meters; endemic; Suchitepéquez (type from Las Nubes, *Bernoulli & Cario* 2872); Quezaltenango; Huehuetenango. To be expected in Mexico (Chiapas).

A shrub 50–100 cm. high, usually woody almost throughout, much branched, the branches suberect, densely appressed-setulose, brown; leaves on slender petioles 5–20 mm. long, thin or rather thick, oblong to narrowly oblong-lanceolate, the larger ones 4–8 cm. long, acute or acuminate, acute or obtuse at the base, 5-nerved, densely appressed-pilose on both surfaces, obscurely serrulate; flowers solitary or clustered, few or numerous; hypanthium densely appressed-hirsute, 5 mm. long or in fruit 8 mm. long; sepals lance-linear or spatulate-linear, 10–13 mm. long or in fruit even longer, at anthesis much longer than the hypanthium; petals 15 mm. long, rose-purple; style 11–12 mm. long.

Tibouchina longisepala* var. *spatulata (Brandegge) L. Wms. Fieldiana, Bot. 29: 581. 1963. *T. spatulata* Brandegge, Univ. Cal. Publ. Bot. 6: 58. 1914.

Probably in open forest, 1,200–2,500 meters; Quezaltenango; San Marcos. Mexico (Chiapas, the type from Cerro del Boquerón).

An erect branched shrub or herb 1.5 meters high or less, the branches densely hirsute with widely spreading, brown hairs; leaves thin, on petioles about 1 cm. long, lance-ovate, mostly 4–6 cm. long and 2–2.5 cm. broad, acute or acuminate, obtuse or rounded at the base, serrulate, appressed-setulose on the upper surface, slightly paler beneath and hirsute with subappressed hairs, 5-nerved; flowers 5-parted, rather few, short-pedicellate at the ends of the branches; hypanthium densely hirsute with spreading hairs, in fruit 7–8 mm. long; sepals much longer than the tube, linear-spatulate; petals red-purple, 11 mm. long, ciliate; stamens conspicuously unequal; filaments glabrous; capsule setulose at the apex.

TOCOCA Aublet

Shrubs or small trees, glabrous or hispid; leaves often unequal in each pair, usually bearing formicaria at the base of the blade or apex of the petiole, entire or denticulate, generally 5-nerved; flowers mostly 5-parted, white or pink, medium-sized, in terminal panicles, racemes, or heads; hypanthium turbinate to campanulate; calyx tube more or less prolonged, erect or flaring, the sepals usually short or obsolete, the exterior teeth always developed, often conspicuous; petals obovate to oblong, inequilateral, usually retuse; stamens isomorphic or nearly so, the filaments stout; anthers linear or subulate, somewhat incurved at the apex; con-

nective elevated into a low ridge, often with a rounded basal protuberance; ovary half inferior, 3-5-celled, often setulose or annulate at the apex; style stout, glabrous or pubescent, the stigma capitate or subpelate; fruit baccate.

About 60 species, all in tropical America and mostly in the Amazonian region. One other Central American species occurs in Costa Rica.

Tococa guianensis Aubl. Pl. Guian. 1: 438, *t.* 174. 1775. *T. coriacea* S. Moore, Jour. Bot. 18: 3. 1880 (type from Belize, British Honduras, *Barlee*). *T. Peckiana* Robinson, Proc. Am. Acad. 45: 395. 1910 (type from Manatee Lagoon, British Honduras, *M. E. Peck* 68). *Maieta glandulifera* Standl. Proc. Biol. Soc. Wash. 37: 52. 1924 (type from Puerto Barrios, Izabal, *Standley* 25002).

Wooded swamps, at sea level; Izabal. British Honduras; Nicaragua; Panama. Tropical South America.

A tall coarse shrub or a small tree, sometimes 7 meters high, the young branchlets stout, complanate, glabrous or sparsely setose, usually setose at the nodes; leaves on stout petioles 1-6 cm. long, the longer petioles usually bearing a didymous, glabrous or setose, large formicarium near the apex; leaf blades chartaceous, ovate-lanceolate to oblong or broadly elliptic, 12-25 cm. long, 6-15 cm. broad, abruptly acuminate or usually caudate-acuminate, rounded and abruptly short-decurrent at the base, entire or dentate, 5-nerved, sparsely setose above, thinly pubescent beneath, especially on the nerves; panicles 10-18 cm. long, the flowers sessile; hypanthium campanulate or turbinate, 5 mm. long, glabrous, punctate, or sparsely setose; calyx scarcely lobate, the exterior teeth broadly triangular, somewhat spreading, glandular-setose; petals obovate, pink, reddish, or bright rose, 8 mm. long.

Reported by Mr. Schipp to be "host plant for a species of formica" (=ant) in British Honduras.

TOPOBEA Aublet

Shrubs or small trees, glabrous or pubescent, erect or sometimes subscandent and epiphytic; leaves usually petiolate, thick, 5-7-nerved, entire, the transverse veins parallel and very numerous, close together; flowers 6-parted, medium-sized, axillary or lateral below the leaves, solitary or fasciculate, on long or short peduncles, rose or white; bracts at the base of the calyx usually shorter than the calyx and closely imbricate in 2 opposite pairs; hypanthium thick-walled, campanulate or urceolate; calyx erect or somewhat spreading, truncate or shallowly lobate, the exterior teeth minute or none; petals oblong to obovate, generally obtuse; stamens isomorphic, the filaments slender; anthers linear or subulate, often curved, the connective not prolonged, simple or with a single dorsal lobe; ovary superior or subinferior, 4-6-celled, the style slender, the stigma punctiform; fruit baccate; seeds obovoid, punctulate, the large raphe lateral.

About 25 species in tropical North America, many more in South America. Several others are found in southern Central America. For an account of the species in Mexico and northern Central America see Williams, Fieldiana, Bot. 29: 581-585. 1963.

Calyx truncate, with or without external dentiform appendages near the margin; bracts one-third to one-half the length of the hypanthium and calyx.

Bracts about one-third as long as the hypanthium and calyx; axils of the main leaf veins without coarse weak hairs. *T. laevigata*.

Bracts about half as long as the hypanthium and calyx; axils of the main leaf veins below with a few coarse weak hairs. *T. calycularis*.

Calyx prominently 6-dentate; the bracts about half as long as the hypanthium and calyx.

Three principal veins separating well above the base of the leaf; bracts of the outer pair divided about half way to the base. *T. calycularis*.

Three principal veins separating at or very near the base of the leaf; bracts of the outer pair free almost to the base.

Outer bracts longer than the inner pair; inflorescence, bracts and hypanthium furfuraceous pubescent. *T. Watsonii*.

Outer bracts equaling the inner ones, obscurely furfuraceous. . . . *T. Standleyi*.

Topobea calycularis Naudin, Ann. Sci. Nat. ser. 3, 18: 149. 1852. *Canchij* (Cobán, Quechí).

Often common in wet forests, 1,500 meters or less; Alta Verapaz; Quiché; Huehuetenango. Mexico.

Small trees or shrubs to about 6 meters tall, the branches slender tetragonous or with four narrow wings or angles, glabrous to thinly brownish furfuraceous; leaves elliptic to oblong-ob lanceolate, abruptly rostrate-acuminate, cuneate to the base, 5-nerved with the outer pair marginal and small, the three principal nerves separating above the base of the blade, leaves of each pair usually unequal, the smaller leaf often only about half as large as the other, blades of the larger leaves about 13-17 cm. long and 2.5-3.5 cm. broad, blades of the smaller leaves 6-10 cm. long and 2.5-3.5 cm. broad, provided with a few large but weak (often barbellate or furfuraceous) hairs in the axils of the main nerves on the under surface; petioles slender, 1.5-3.5 cm. long; inflorescence a single flower or a fascicle of 2-4 flowers in the leaf axils, the inner flower of the fascicles maturing first; pedicels about 7 mm. long or less; bracts subtending the flowers of two subequal pairs, closely appressed, the outer pair connate to near the middle, acute, the inner pair free to the base, truncate or somewhat retuse, transversely reniform, usually ciliate; hypanthium and calyx 7-8 mm. long, glabrous or furfuraceous, the hypanthium urceolate, the calyx somewhat expanded, the margins entire but with six external dentiform appendages just below the margin; petals 6, ovate-rhombic, acute, somewhat asymmetric, fleshy, about 10 mm. long and 7 mm. broad; stamens 12, similar, free, anther about 7 mm. long and the filament about as long, the connective minutely appendaged dorsally or not.

Very closely related to *T. laevigata* and perhaps not distinct.

Topobea laevigata (D. Don) Naudin, Ann. Sci. Nat. ser. 3, 18: 150. 1852. *Blakea laevigata* D. Don, Mem. Wern. Soc. 4: 327. 1823.

In forests, at low elevations; Alta Verapaz. Mexico (Vera Cruz) and British Honduras (Toledo district, *Gentle* 4928).

Small to fairly large trees with grayish-white bark, the branches obscurely tetragonous, completely glabrous; leaves petiolate, elliptic-oblong to narrowly obovate, cuneate to the base, the apex rostrate-acuminate, 3-5-nerved, the marginal pair obscure or perhaps lacking, secondary nerves prominent with an inner angle of about 60° to the mid-nerve, the blade 5-10 cm. long including rostrate apex, 2.3-4 cm. broad, petiole 1-2.5 cm. long, the pairs of leaves equal or slightly unequal; inflorescences of 1-2 pedicellate flowers in the axils of leaves, glabrous, the pedicels 0.8-2.5 cm. long; bracts subtending flowers in two subequal opposed pairs, the outer pair acute, joined to about the middle, about 3-4 mm. long, the inner pair free, truncate or nearly so, subequal to the outer pair; hypanthium and calyx 0.8-1.2 cm. long, the hypanthium urceolate, the calyx truncate with obscure external processes at the apex; petals obovate, acute, somewhat lobate toward the base, about 10 mm. long and 6 mm. broad; anthers about 6 mm. long, the filaments about 5 mm. long, flat, connective unappendaged; style 8-9 mm. long, recessed in the 6-lobulate apex of the ovary.

The description is drawn from *Gentle* 4928.

Topobea Standleyi L. Wms. Fieldiana, Bot. 29: 583, *t.* 18. 1963 (type from Guatemala, *Standley* 69709).

In oak-pine forests, 1,500 meters; Baja Verapaz. Endemic.

Small trees or shrubs to 8 meters tall, the branches stout, obtusely tetragonous or subterete, glabrous or nearly so; leaves elliptic to oval, glabrous or the petiole obscurely puberulent at first, long petiolate, abruptly acuminate, the blade 4.5-15 cm. long, 1.5-10 cm. broad (mostly about 9 × 4 cm.), cuneate or acute to the base, 5-nerved, the lateral pair very obscure, secondary nerves diverging at about 80°, the petiole 1.5-4 cm. long, slender; inflorescence 1-2 short pedicellate flowers in the axils of upper leaves; flower with short fleshy pedicels 1 cm. long or less, the subtending bracts minutely furfuraceous, two opposed pairs, the outer pair ovate, as long as or slightly longer than the inner pair, about 5 mm. long, divided to the base, the inner pair free and truncate or rounded; hypanthium and calyx coriaceous, obscurely furfuraceous, about 7-8 mm. long, the hypanthium urceolate, the calyx regularly 6-dentate, somewhat flaring; petals subrhombic, or ovate-subrhombic, acute, fleshy, obscurely retrorse-ciliate, to 7 mm. long and 5 mm. broad; stamens apparently free, the anther about 5 mm. long, the filament a little shorter, the connective lacking dorsal appendage.

Topobea Watsonii Cogn. in DC. Monog. Phan. 7: 1089. 1891. *T. rosea* Gleason, Carn. Inst. Wash. Publ. 522: 336. 1940.

Lowland forests, perhaps mostly under 200 meters; Izabal (type *Watson*). British Honduras; Nicaragua.

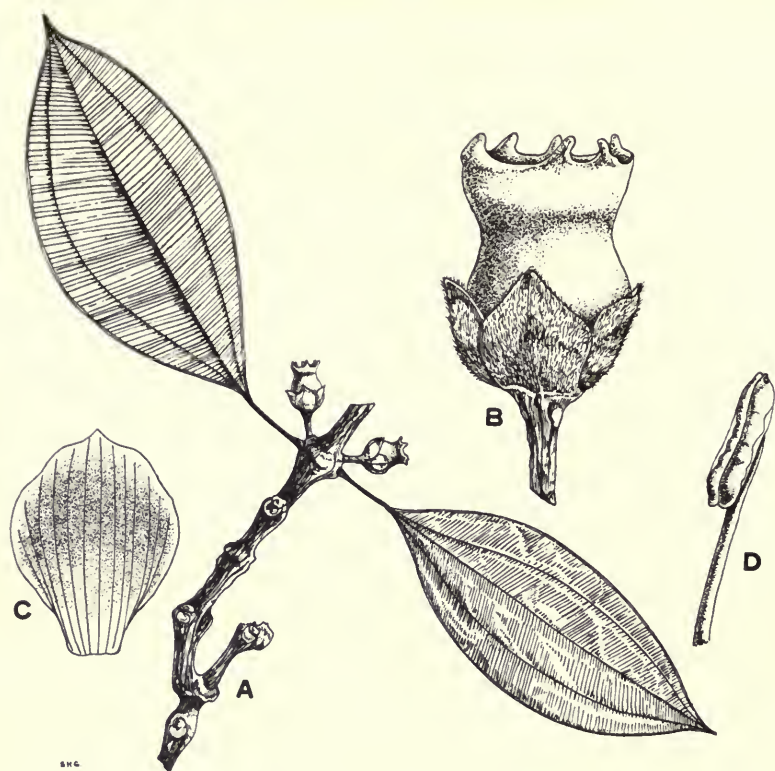


FIG. 83. *Topobea Standleyi*. A, Habit; $\times \frac{1}{2}$. B, Bracts, hypanthium and calyx; $\times 2\frac{1}{2}$. C, Petal; $\times 2\frac{1}{2}$. D, Stamen; $\times 4$.

Shrubs or small trees to 8 meters, the branches slender, furfuraceous-pubescent, becoming glabrous; leaves elliptic to oval, rostrate-acuminate, the pairs somewhat unequal, somewhat furfuraceous to glabrous, 5-nerved (sometimes with a marginal pair of very obscure nerves), the blade 5–17 cm. long and 2.5–7 cm. broad, the petioles 1–3 cm. long; inflorescence 1–3-flowered fascicles in leaf axils; pedicels to about 1 cm. long, often quite furfuraceous; outer bracts free nearly to the base, acute or often acuminate, longer than the inner pair, 1 cm. long or less, the inner pair shorter, acute; hypanthium and calyx coriaceous, usually densely furfuraceous, prominently 6-dentate, about 8–11 mm. long; petals rhombic-ovate, to about 1 cm. long.

TRIOLENA Naudin

Reference: Louis O. Williams, *Fieldiana*, Bot. 29: 585–586. 1963.

Plants herbaceous or suffrutescent, the stems simple or sparingly branched, erect or decumbent, glabrous, pilose or paleaceous; leaves petiolate, the pairs dimorphic or isomorphic, membranaceous, entire or denticulate, 5-nerved, 5–7-plinerved or rarely penninerved; inflorescence usually a terminal scorpioid spike

or raceme; hypanthium campanulate, usually 3-winged in age; sepals usually shorter than the hypanthium, often unequal; petals obovate, sometimes retuse or truncate; stamens 10, the anthers equal or somewhat dissimilar, opening by 1-2 apical pores; connective produced below the cells on the ventral side into 2-3 slender, erect spurs; ovary superior or rarely semi-inferior, triquetrous, 3-celled; style filiform, the stigma subcapitate or subtruncate; capsule 3-valvate.

Diolena Naudin is a generic synonym which, in the past, usually has been separated from *Triolena* principally by the artificial characters of the appendages of the stamens.—There are some 20 species of the genus; one other occurs in Mexico and another in Panama.

Connective of the anther (or at least of the larger ones) bearing 3 spur-like appendages.

Leaves sparsely or densely hirsute beneath with stiff spreading hairs, also strigose on the nerves. *T. izabalensis*.

Leaves strigose beneath, chiefly on the nerves, without stiff spreading hairs. *T. paleolata*.

Connective of the anthers bearing 2 spur-like appendages.

Leaves narrowly lanceolate, oblanceolate, or linear-oblanceolate, 7-15 mm. broad, attenuated to the base or acute, sparsely hirsute beneath with stiff spreading hairs. *T. stenophylla*.

Leaves oblong or obovate-oblong or narrowly elliptic, mostly 2-7.5 cm. broad, usually obtuse or narrowly rounded at the base, the pubescence of the lower surface of appressed hairs.

Leaves thinly setose-hirsute on the upper surface; petals rose or rose-purple. *T. roseiflora*.

Leaves glabrous on the upper surface; petals white. *T. calciphila*.

Triolena calciphila (Standl. & Steyerf.) Standl. & L. Wms. Fieldiana, Bot. 29: 585. 1963. *Diolena calciphila* Standl. & Steyerf. Field Mus. Bot. 23: 133. 1944.

Usually in wet, mixed forests on steep banks or rocks, 750-1,350 meters; endemic; Alta Verapaz; Quiché (type from "Zona Reyna," Skutch 1811).

Plants herbaceous or suffrutescent, erect or decumbent at the base, simple, 20 cm. high or less, the stem nodose, paleaceous-strigose, with short internodes; leaves thick-membranaceous, subequal or those of a pair very unequal, on slender unequal petioles 2 cm. long or less, elliptic to ovate-elliptic or oblong-lanceolate, 4-7.5 cm. long, 1.5-4.5 cm. broad, acute or narrowly acuminate, rounded to acute at the base, 3-5-plinerved, green and glabrous above, paler beneath, strigose on the nerves and veins, subentire or serrulate; inflorescence terminal, with the peduncles as much as 7 cm. long, few-flowered, the rachis glabrous or glabrate, the thick pedicels 3 mm. long or less, sparsely furfuraceous or glabrate; hypanthium 2-2.5 mm. long, turbinate, usually sparsely paleaceous-strigose; calyx lobes very short, depressed, membranaceous, the exterior teeth green, subulate, somewhat spreading, 1.5-2 mm. long; petals white, 8 mm. long; anthers oblong, 1.2 mm. long; spurs of the anther connective 2, very slender, erect, equaling the anther; capsule 7 mm. broad.

Triolena izabalensis Standl. & Steyerm. Field Mus. Bot. 23: 138. 1944.

Wet thickets, in banana plantations, or on wet wooded bluffs, at or little above sea level; endemic; Izabal (type collected near headwaters of Río Lámpara, *C. L. Wilson* 175; collected also along Río Dulce above Livingston).

Plants herbaceous or suffrutescent, erect or decumbent, about 30 cm. high, simple, the stem nodose, densely yellowish-hirsute with long spreading hairs; leaves membranaceous, the slender petioles very unequal, 0.5–4 cm. long, densely hirsute; leaf blades obovate-oblong or narrowly elliptic-oblong, 9–20 cm. long, 4.5–7 cm. broad, acute or short-acuminate, slightly narrowed toward the base, the base itself narrowly rounded and emarginate or shallowly cordate, usually unequal, 5–7-plinerved, serrate-denticulate, the inner nerves inserted as much as 3 cm. above the base of the blade, thinly setose-hirsute above, slightly paler beneath, sparsely or densely setose-hirsute with long spreading yellowish hairs, densely appressed-setose on the nerves; inflorescences, including the short or elongate peduncle, 3–13 cm. long, secund, many-flowered, the rachis densely spreading-hirsute, the thick pedicels as much as 3 mm. long; hypanthium densely covered with very long, slender, spreading hairs; petals white, glabrous, 8 mm. long; fruiting hypanthium 7 mm. broad.

Triolena paleolata Donn.-Sm. Bot. Gaz. 13: 28. 1888.

Usually on wet shaded limestone cliffs, 1,500 meters or less; Alta Verapaz (type from Pansamalá, *Tuerckheim* 726); Baja Verapaz; Izabal; Huehuetenango. Probably in southern Mexico.

Plants usually suffrutescent, simple or with a few branches, erect or decumbent, 30 cm. high or less, the stems densely covered with appressed or subappressed, stout and subpaleaceous hairs, similar hairs present also on the petioles, nerves of the lower leaf surface, and pedicels; leaves and petioles often very unequal, the longer petioles as much as 2.5 cm. long, the shorter ones often 5 mm. long or less; leaf blades ovate-lanceolate to oblong-lanceolate, mostly 10–15 cm. long and half as broad or narrower, acute or acuminate, obtuse to narrowly rounded and emarginate at the base, 5-plinerved, often very oblique at the base, very sparsely hirsute above, paleaceous-hirsute beneath on the nerves with closely appressed hairs; inflorescences pedunculate, much shorter than the leaves, few-many-flowered, the stout rachis more or less hirsute, the thick pedicels 2 mm. long or less; calyx lobes triangular-subulate, about equaling the hypanthium, this densely hirsute with spreading hairs; petals 1 cm. long, white or usually pink; capsule 6–7 mm. broad; seeds obconic, muriculate, pale, with a red aril.

Probably synonymous is *T. radicans* Brandegee, described from Veracruz.

Triolena roseiflora (Standl. & Steyerm.) Standl. & L. Wms. Fieldiana, Bot. 29: 586. 1963. *Diolena roseiflora* Standl. & Steyerm. Field Mus. Bot. 23: 134. 1944.

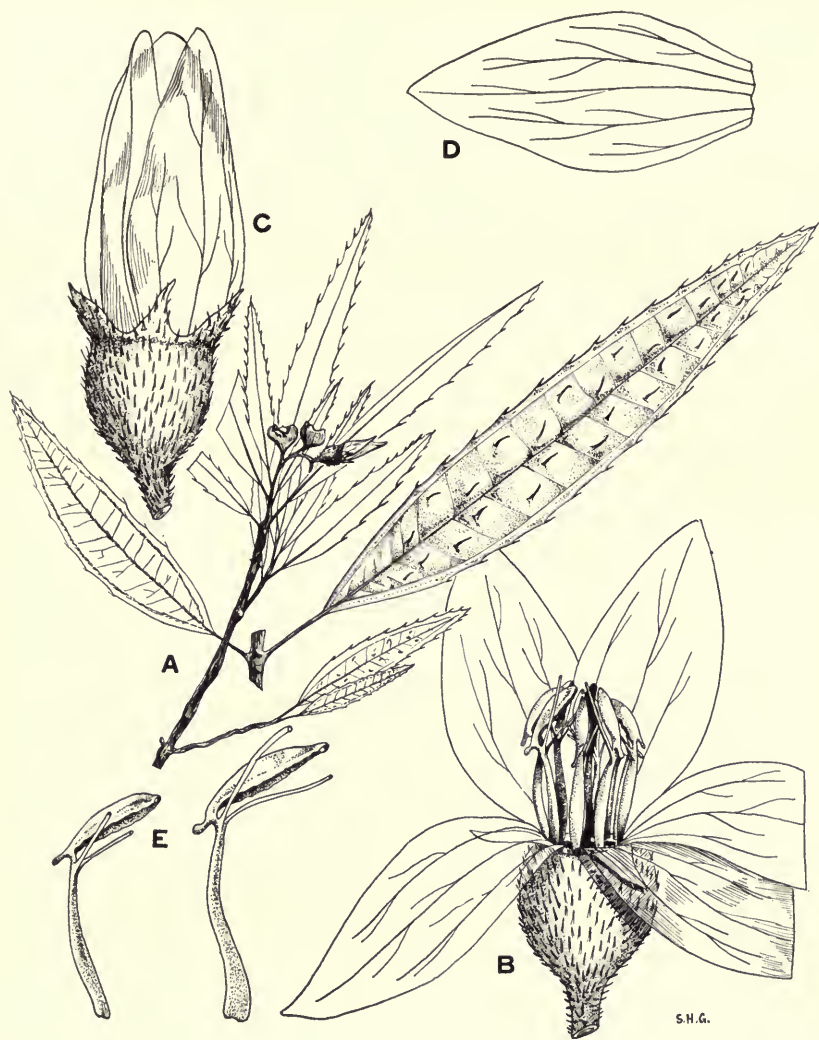


FIG. 84. *Triolena stenophylla*. A, Habit; $\times 1$. B, Flower, partly dissected; $\times 5$. C, Bud; $\times 5$. D, Petal; $\times 5$. E, Stamens, one from each series; $\times 10$.

Wet mixed forest at or little above sea level; endemic; Izabal (type *Steyermark* 41819).

Plants herbaceous or suffrutescent, erect or decumbent at the base, simple, 30 cm. high or less, the stems stout, subterete, densely paleaceous-strigose; leaves of a pair subequal or very unequal, membranaceous, the petioles of a pair often very unequal, 1–6.5 cm. long, densely furfuraceous-strigose; leaf blades elliptic-oblong or ovate-oblong, 6–20 cm. long, 2.5–8.5 cm. broad, acuminate or long-

acuminate, somewhat cuneately narrowed to the base, the base narrowly rounded or obtuse, 5-plinerved, sparsely setose-hirsute above, paler beneath, densely strigose on the nerves and veins, entire or subentire; racemes terminal, with the elongate peduncle 6–13 cm. long, the rachis paleaceous-strigose or almost glabrous, the thick pedicels 3 mm. long or less; hypanthium with the sepals 2–2.5 mm. long, campanulate, densely and minutely furfuraceous-strigillose; sepals very short or almost none, the outer teeth 0.5–1 mm. long, subulate; petals 6–7 mm. long, rose-purple or deep rose, glabrous; appendages of the anther connective 2, very slender, equaling the anther; anthers oblong, 1.2 mm. long; capsule 8 mm. broad.

Triolena stenophylla (Standl. & Steyererm.) Standl. & L. Wms. *Fieldiana*, Bot. 29: 586. 1963. *Diolena stenophylla* Standl. & Steyererm. *Field Mus. Bot.* 23: 135. 1944.

In wet mixed forest, 200–1,500 meters; endemic; Alta Verapaz; Huehuetenango (type *Steyermark* 48728).

Plants suffrutescent, erect, stiff, 15–30 cm. high, simple or sparsely branched above, the stems slender, densely leafy above, densely furfuraceous-strigose with short brownish hairs; leaves membranaceous, those of a pair subequal or very unequal, on slender petioles 1 cm. long or usually shorter, linear-lanceolate to narrowly lanceolate or narrowly oblanceolate, 4–7 cm. long, 7–15 mm. broad, long-attenuate to an acute apex, gradually attenuate to the base, the base itself attenuate to subobtuse, 3-plinerved and above the base regularly and conspicuously penninerved, remotely serrulate, deep green above, sparsely setose-hirsute, paler beneath, sparsely setose-hispid, strigose on the nerves; racemes terminal or from the upper leaf axils, equaling or shorter than the leaves, the rachis sparsely furfuraceous-strigillose or almost glabrous, the thick pedicels 3 mm. long or less; hypanthium campanulate, 2–2.5 mm. long, densely furfuraceous-strigillose; sepals very short and depressed, the outer teeth triangular-subulate, 1.5 mm. long, suberect; petals white or tinged with pink, glabrous, 7–8 mm. long; anthers 1.2 mm. long; appendages of the connective 2, filiform, erect, about equaling the anther; capsule 7 mm. broad.

The following Melastomaceae are described or reported from Guatemala by Bertoloni on the basis of collections made by Velásquez. Three new species are fully described, but because of the complexity of the family it does not seem advisable to attempt to identify the names without examination of the types, which may or may not become accessible.

RHEXIA GLANDULOSA Bertol. Fl. Guat. 415. 1840. Type from Antigua, *Velásquez*. A shrub with hirsute branches, the inflorescence glandular-pilose.

RHEXIA FRAGILIS Bertol. l.c. 416. Type from Antigua, *Velásquez*. A shrub(?) with white flowers.

MELASTOMA ROSTRATA Bertol. l.c. 417. Type from Antigua, Velásquez. Apparently herbaceous; petals lanceolate, acuminate. Perhaps *Leandra*.

MELASTOMA GRANULOSA Humb. Escuintla, Velásquez. A misidentification but possibly a species of *Miconia*. *Miconia granulosa* (Humb.) Naudin is a species from northern South America.

Rhynchanthera medialis Standl. & Steyererm. See also under *Rhynchanthera*. This plant should be watched for among apparently new things. It is known only from unsatisfactory fruiting material and probably does not belong in *Rhynchanthera*, but could be a genus previously unreported from continental North America.

ONAGRACEAE. Evening Primrose Family

Annual or perennial herbs, rarely shrubs or trees, with watery sap, pubescent or glabrous, sometimes aquatic; leaves opposite, alternate, or verticillate, entire to dentate or pinnatifid; stipules none; flowers usually perfect and regular, sometimes irregular, mostly axillary and solitary, sometimes spicate, racemose, or paniculate, small or large and showy; hypanthium (calyx tube) often long-produced above the ovary into a slender tube; sepals 2-6, often colored, valvate, frequently appendaged at the apex; petals generally 2-5, rarely none, often inserted at the base of a disk, fugacious, contorted; stamens 1-8, inserted with the petals, 1-2-seriate, part of them sometimes without anthers; filaments usually filiform, sometimes declinate; anthers oblong or linear, rarely didymous or globose, attached dorsally to the filament, 2-celled, interiorly dehiscent; disk usually lobate, undulate, or glandular; ovary inferior, 1-6-celled, commonly 4-celled, the style filiform, simple, the stigma capitate, entire, 4-lobate, or 4-parted; ovules solitary or numerous, 1-2-seriate or rarely multiseriate, ascending or pendulous, generally anatropous; fruit capsular, nut-like, or baccate, often elongate and septicidally or loculicidally 4-valvate, the valves then separating from the seed-bearing axis; seeds usually numerous, sometimes few or only 1, generally small, the testa membranaceous or coriaceous, smooth or papillose; endosperm none or scant; cotyledons compressed, usually plano-convex, the radicle short, straight.

Genera about 20, the species widely distributed in both hemispheres, most numerous in temperate or warm-temperate regions. Only the following genera are represented in Central America.

One other member of this family occurs in Guatemala (*Seler & Seler* 2655, in Gray Herbarium) but the specimen is inadequate for determination. It has been determined as *Semeiandra grandiflora* Hook. & Arn. by Donnell Smith and by Standley and "near *Lopezia grandiflora* Zucc." by Munz. It is obviously neither of these species. A specimen, also without flowers, *Gentry* 6450, from Sinaloa, Mexico, seems to be identical with the *Seler* collection.

Shrubs or trees, with hard woody branches.

Fruit baccate; petals not normally white. *Fuchsia*.

Fruit capsular; petals white. *Hauya*.

Herbs with soft branches, or unbranched.

Seeds bearing a tuft of hairs at one end; plants with narrow leaves and very small, white or pinkish flowers. *Epilobium*.

Seeds without a tuft of hairs.

Fertile stamens only one. *Lopezia*.

Fertile stamens 3-4 or usually more.

Cells of the ovary 1-ovulate; fruit indehiscent.

Ovary adnate to the subtending branch (gall-like); plants annual.

Gongylocarpus.

Ovary not adnate to the subtending branch; plants perennial. . . . *Gaura*.

Cells of the ovary with few or numerous ovules; fruits usually dehiscent.

Hypanthium conspicuously produced beyond the apex of the ovary, usually much elongated. *Oenothera*.

Hypanthium not produced beyond the apex of the ovary.

Leaves opposite; stamens 4. *Ludwigia*.

Leaves alternate; stamens 5-12.

Stamens 5; capsule conspicuously torulose. *Oocarpon*.

Stamens 8-12; capsule not or scarcely torulose. *Jussiaea*.

EPILOBIUM L.

Reference: Philip A. Munz, North American species of *Epilobium* south of the United States, *Aliso* 4: 485-490. 1960.

Erect to decumbent or repent, annual or perennial herbs, usually pubescent; leaves alternate or opposite, entire or dentate, usually narrow; flowers small, axillary, solitary or subracemose, white, pink, or purple; calyx tube little or not at all produced above the apex of the ovary, linear, 4-angulate or subterete; sepals 4, deciduous; petals 4, obovate or obcordate, erect or spreading; stamens 8, alternately slightly unequal, the anthers linear or oblong, not revolute; ovary 4-celled, the style filiform; stigma obliquely clavate or 4-lobate, the lobes erect or recurved; ovules numerous, biseriate along the interior angle of the cell, ascending; capsule elongate, 4-angulate, 4-celled, loculicidally 4-valvate, the valves separating from the 4-angulate seminiferous column; seeds numerous, ascending, bearing long hairs at the apex, the testa crustaceous or membranaceous, thin.

Species about 150, in temperate and cold regions of both hemispheres; in the tropics confined to the mountains. Only one other species is found in Central America.

***Epilobium mexicanum* DC. Prodr. 3: 41. 1828.**

Moist or wet, grassy meadows, or more commonly along brooks or in bogs, chiefly in alpine regions, 2,100-3,500 meters; Huehuetenango (Sierra de los Cuchumatanes); Totonicapán; Quezaltenango; San Marcos; Chimaltenango. Central and southern Mexico.

Plants perennial from a short creeping rhizome, producing short, very leafy stolons, the stems purplish or reddish, mostly 25–50 cm. high, inconspicuously pubescent in lines, simple or sparsely branched; leaves rather thick, glabrous, the lowest ones opposite, subentire, obtuse, oblong or lanceolate, the lateral nerves conspicuous, the middle leaves ovate-lanceolate, acute, rounded at the base, sessile, 2–2.5 cm. long, obtusely denticulate, the uppermost leaves alternate; flowers small, erect, in the axils of the upper leaves, about 6 mm. long, pale pink or white; sepals lanceolate, acute, glabrate; capsules slender, glabrate, often dark red or purplish, about 5 cm. long, the slender pedicels about equaling the subtending leaves; seeds fusiform, attenuate at each end, slightly more than 1 mm. long, papillose, bearing at one end a tuft of white hairs.

Because of the copious soft hairs borne at one end of the seeds, these are well adapted to transportation by wind. In spite of this, the plant is not widely distributed in Guatemala and it seldom is plentiful in any one locality.

FUCHSIA L. Fuchsia

Reference: Philip A. Munz, A revision of the genus *Fuchsia*, Proc. Calif. Acad. Sci. IV. 25: 1–138, *tt.* 1–16. 1943.

Shrubs or small trees, pubescent or glabrate; leaves opposite, alternate, or verticillate, entire or usually dentate, usually with small deciduous stipules; flowers axillary and solitary or clustered, rarely racemose or paniculate, pink, red, purple, or violet, small or often large and showy, long-pedunculate, nutant or pendulous, sometimes polygamous; calyx tube globose or ovoid at the base, produced above the ovary into a 4-lobate, deciduous, campanulate or funnelliform limb; petals 4 or rarely none, convolute, spreading, or reflexed; stamens 8, the filaments filiform, the anthers linear or oblong; ovary 4-celled; style elongate, the stigma capitate or clavate, entire or 4-lobate; ovules numerous, multiseriate along the interior angle of the cell; fruit baccate, 4-celled, few-many-seeded; seeds angulate or reniform, the testa membranaceous.

About 100 species, chiefly in cool mountain regions from Mexico to Patagonia, a few species in New Zealand and Tahiti. A few additional species occur in southern Central America. The Guatemalan fuchsias vary greatly in habit and general appearance. A few have handsome and showy flowers, but in most the flowers are small and not at all conspicuous, and such plants have little resemblance to the common cultivated fuchsias of the United States. The fruits in all species are sweet, very juicy, and edible.

The treatment of the small-flowered fuchsias given here is not at all satisfactory. It follows rather closely that of Munz cited above, and that is doubtless the best arrangement of the species that has been provided thus far. The characters used for separating the species are for the most part rather trivial, and variable. It is question-

able whether there are in Guatemala as many species of *Fuchsia* as are recognized here.

Flowers in large terminal panicles. *F. arborescens*.

Flowers solitary or clustered in the leaf axils or in terminal simple racemes.

Stamens exceeding the petals; flowers large, mostly 3–7.5 cm. long.

Flowers in terminal racemes; leaf blades lanceolate, oblanceolate, or narrowly lance-oblong, acute or obtuse at the base. *F. boliviana*.

Flowers axillary; leaf blades mostly ovate, cordate or broadly rounded at the base.

Tube of the calyx shorter than the sepals; cultivated plants. . . . *F. hybrida*.

Tube of the calyx slightly or much longer than the sepals; native plants.

Flowers (from base of ovary to apex of sepals) mostly 8–9 cm. long, the calyx tube 2–3 times as long as the sepals; branches usually glabrous.

. *F. cordifolia*.

Flowers about 5 cm. long, the calyx tube scarcely twice as long as the sepals; branches sparsely or densely villous-pilose. *F. splendens*.

Stamens exceeded by the petals; flowers small, less than 2 cm. long.

Calyx tube obconic; sepals more than half as long as the tube, usually reflexed at anthesis.

Hypanthium longer than broad; stamens included; young growth glabrate to pubescent. *F. tacanensis*.

Hypanthium not longer than broad when pressed; stamens evident; young growth finely strigillose. *F. Skutchiana*.

Calyx tube subcylindric; sepals usually not more than half the length of the tube, ascending to somewhat spreading at anthesis.

Calyx glabrous. *F. microphylla*.

Calyx sparsely or densely pubescent.

Leaves glabrous beneath. *F. striolata*.

Leaves copiously pubescent beneath.

Petals 1–2 mm. long; leaves mostly 1–2.5 cm. long. . . *F. michoacanensis*.

Petals about 3 mm. long; leaves mostly 3–7 cm. long. . . *F. tetradactyla*.

Fuchsia arborescens Sims, Bot. Mag. 53: t. 2620. 1825. *F. arborescens* var. *megalantha* Donn.-Sm. Bot. Gaz. 18: 2. 1893 (type from Volcán de Acateño, Sacatepéquez, J. D. Smith 2469). *Flor de verano*; *amor de verano*; *cinco negritos* (Quezaltenango); *amor fino*; *cerezo* (Quezaltenango); *nance de montaña* (Quezaltenango).

Moist or wet, mixed forest or more often at the edge of the forest or in open meadows, often in thickets, 1,300–2,900 meters; Alta Verapaz; Baja Verapaz; Zacapa; Chiquimula; Guatemala; Sacatepéquez; Chimaltenango; Quiché; Sololá; Suchitepéquez; Retalhuleu; Quezaltenango; San Marcos. Southern Mexico; Honduras; Costa Rica; Panama.

A shrub or tree 1.5–8 meters high, glabrous throughout or nearly so, the trunk short and thick, the crown dense and rounded; leaves opposite or ternate, slender-

petiolate, oblanceolate or oblanceolate-oblong, 7–20 cm. long, acute or acuminate, attenuate to the base, entire or serrulate, paler beneath; flowers rose-red or red-purple, about 12 mm. long, forming large and usually dense, terminal panicles; lobes of the calyx about equaling the tube, linear-oblong, obtuse, reflexed in flower; flower buds rounded or very obtuse at the apex; petals shorter than the sepals; stamens usually conspicuously exserted; fruit subglobose, as much as 1 cm. in diameter when fresh, dark purple or purple-black, with a bloom.

This is a handsome shrub or tree, abundant at many places in the higher mountains, apparently in flower for most of the year. On the Volcán de Acatenango it grows in *Chiranthodendron* forest but it is found elsewhere in various forest types, and the trees are at their best when growing in the open. They are often cultivated for ornament, especially in the central region and about Cobán. Large bunches of the flowers often are exposed for sale in the markets.

Munz recognizes three forms of *Fuchsia arborescens* which seem to us to have little or no practical value and perhaps grade one into the other. Forma *arborescens* is according to Munz the most common form; forma *tenuis* Munz, Proc. Cal. Acad. Sci. 25: 86. 1943, is reported from several Guatemalan departments; forma *parva* Munz, l.c., is recorded from several departments and the type is *Standley* 68287, from Finca Pirineos, Quezaltenango, and like the last form is about as wide-ranging as the species.

FUCHSIA BACILLARIS Lindl. Bot. Reg. 28: t. 1480. 1832.

Reported from Guatemala by Dr. Munz, based on *Skutch* 1247 from the department of Huehuetenango. This plant fits neither Dr. Munz' description nor his key and is identical with other plants collected by Skutch which he has determined as *F. microphylla* HBK.

Fuchsia boliviana Carr. Rev. Hort. 48: 150, *illus.* 1876.

A species of Bolivia and Peru, represented in Guatemala in cultivation by the following variety.

Fuchsia boliviana var. **luxurians** I. M. Johnston, Contr. Gray Herb. 75: 38. 1925. *Fusia*; *melocotoncillo*; *aritón*.

Native of Colombia and Venezuela; planted commonly for ornament in the mountains of Guatemala, El Salvador and Costa Rica; often growing in hedges where it receives little or no attention.

Usually a shrub of 1.5–2.5 meters, the branches slender, densely short-pilose; leaves opposite or ternate, slender-petiolate, narrowly oblong, oblanceolate-oblong, or lance-oblong, 7–14 cm. long, acute, usually narrowed to the acute or obtuse base, entire or nearly so, green on the upper surface, short-pilose, grayish beneath,

very densely velutinous-pilose; inflorescence racemose, pendent, elongate and many-flowered, usually dense, the peduncles subtended by greatly reduced leaves; flowers bright coral-red, mostly 5.5–7.5 cm. long, thinly pilose or the ovary usually very densely pilose, the calyx tube long and slender, 4–5 mm. broad at the apex, the sepals triangular-lanceolate, attenuate, about 1.5 cm. long; petals about 1 cm. long; stamens equaling or usually exceeding the petals; berries narrowly oblong, 2 cm. long and 6 mm. broad in the dry state, probably much larger when fresh and mature.

In the typical form of the species the calyx tube is only 3–4 cm. long. This shrub is an exceptionally handsome one and it is very popular in Indian gardens of Guatemalan villages. It grows luxuriantly with but little water and little or no attention and may be found in blossom even during the height of the dry season.

Fuchsia cordifolia Benth. Pl. Hartweg. 74. 1841. *Melocotón; platanillo* (Volcán de Tajumulco).

Moist or wet forest, often in loose sand, sometimes in high pine forest, often growing on cliffs and very frequently epiphytic on trees, 2,400–3,300 meters; endemic; Sololá; Huehuetenango; Quezaltenango (type from Volcán Xetuch, i.e. Santa María, at 3,000 meters, Hartweg 528); San Marcos. To be expected in Chiapas.

A shrub or tree, sometimes 6 meters high, usually much lower, terrestrial or very often on mossy tree branches, then generally pendent, the branches usually glabrous, sometimes sparsely villous-pilose, the older ones stout and thick, covered with ferruginous exfoliating bark; leaves on very long, slender petioles, membranaceous, deciduous, opposite or ternate, ovate or broadly ovate, 5–10 cm. long, acute or acuminate, shallowly or deeply and narrowly cordate at the base, denticulate, sparsely or rather densely puberulent on both surfaces; peduncles axillary, solitary, longer or shorter than the petioles, the flowers pendent, 6–9 cm. long, sparsely or rather densely short-pilose; calyx tube terete, 7–8 mm. broad at the apex, the tube dull or bright red; sepals triangular-lanceolate, about 1.5 cm. long, pale green, long-acuminate; petals pale green, scarcely more than half as long as the sepals; stamens long-exserted; berries oval, 2.5–3.5 cm. long.

This is a fine and handsome plant, common on the upper wooded slope of Volcán de Santa María, well known there by the name *melocotón*. It often forms large masses upon mossy tree trunks and is very conspicuous because of the numerous, large, highly and attractively colored flowers. On the upper slopes of Santa María, as is usual on Central American volcanoes, water is scarce or absent. These slopes are much visited by hunters and frequented by sheep herders from the village of Palojunoj, who find it unnecessary to carry drinking water on their wanderings, because the very large and juicy, somewhat acidulous fruits of the *melocotón* furnish an altogether satisfactory substitute for that liquid. The senior author

had described to him before his ascent of the volcano the *melocotón*, which was so important to people frequenting the slopes, and was quite unable to guess what it might be, the common name being especially misleading. Persons familiar only with fuchsias as grown in pots would not be likely to suspect that these plants might provide an excellent substitute for water.

Fuchsia hybrida Hort. *Fusia*; *chorros*; *aretas de la cocinera*; *Adelaida*; usually called *fusia*.

This is the common cultivated fuchsia, of mixed South American ancestry, grown for ornament in most civilized regions of the earth. There are several distinct forms cultivated in Guatemala, in pots in the colder regions such as Quezaltenango, but more often out of doors at lower elevations. Fuchsias seem to thrive at all elevations in Guatemala and grow luxuriantly in moderately good soil, where protected from wind. Some of the bushes about Cobán are large, often 3 meters high or more, and almost tree-like.

Fuchsia michoacanensis Sessé & Mocino, *Naturaleza* II. 1: App. 58. 1888. *F. biflora* Sessé & Mocino, *Fl. Mex.* ed. 2. 93. 1894. *F. chiapensis* Brandege, *Univ. Cal. Publ. Bot.* 6: 59. 1914. *F. heterotricha* Lundell, *Contr. Univ. Mich. Herb.* 4: 19. 1940. *Arete*; *aretas de Guadalupe*; *fusia de monte*.

Moist or wet, dense or open, mixed forest, or often in forest of pine, oak, or *Cupressus*, common in thickets, sometimes on exposed rocky places in the higher mountains, occasionally on limestone, 1,500–3,000 meters; Alta Verapaz; Baja Verapaz; Jalapa; Jutiapa; Guatemala; Sacatepéquez; Huehuetenango; Totonicapán; Quezaltenango; San Marcos. Southern Mexico; El Salvador; Costa Rica.

A terrestrial shrub, very variable in habit, usually erect and 1–2 meters high, sometimes, especially in exposed places or where grazed, very low and intricately branched, sometimes weak and much elongate, straggling over other shrubs or low trees and with slender branches 6–12 meters long, the largest stems usually less than 5 cm. in diameter, the older ones covered with brown exfoliating bark, the young branches usually densely grayish-puberulent; leaves membranaceous, slender-petiolate, mostly ovate to broadly rhombic-ovate or elliptic, generally 1.5–5 cm. long, obtuse or acute, rounded to acute at the base, deep green and puberulent above, green or slightly paler beneath, thinly pilose or short-hirsute, denticulate or subentire; flowers small, axillary, solitary, often very numerous, on short slender peduncles; flowers rounded and cuspidate at the apex in bud, about 12 mm. long, puberulent and often bearing a few spreading stiff hairs, red or coral-red; calyx tube deeply constricted above the globose ovary, slightly dilated above, usually at least twice as long as the lobes; calyx lobes ovate, acuminate; petals

half as long as the sepals or slightly longer, pale; stamens shorter than the petals; berries 5–6 mm. in diameter, subglobose, purple-black at maturity.

To this species probably belongs much of the material reported from Guatemala at various times as *F. minimiflora* Hemsl., *F. mixta* Hemsl., and *F. parviflora* Zucc. It is one of the commonest shrubs in the mountain forest of central and western Guatemala. While the flowers are small and usually inconspicuous, they often occur in such abundance as to make the shrub a rather showy and handsome one. —See comment concerning this species under *F. microphylla*.

Fuchsia microphylla HBK. Nov. Gen. & Sp. 6: 103, *t.* 534. 1823. *F. aprica* Lundell, Contr. Univ. Mich. Herb. 4: 18. 1940 (type from Volcán de Tacaná, Chiapas, *E. Matuda* 2378). *F. microphylla* var. *aprica* Munz, Proc. Cal. Acad. Sci. 25: 95. 1943.

Mostly in dense, moist or wet, mixed forest, sometimes in low thickets or in exposed rocky places, 1,200–3,800 meters; Alta Verapaz; Baja Verapaz; El Progreso; Zacapa; Sacatepéquez; Chimaltenango; Totonicapán; Quiché; Huehuetenango; Quezaltenango; San Marcos. Southern Mexico.

An erect shrub of 1–2.5 meters, sometimes low and prostrate or nearly so, sparsely or often very densely branched, the branches brown or ferruginous, puberulent; leaves small, opposite, petiolate, membranaceous or rather thick, lance-oblong to oblong-elliptic or obovate, mostly 1–2.5 cm. long, generally obtuse, acute at the base, remotely denticulate, glabrous on both surfaces or nearly so; flowers axillary, solitary, rose-red to red or purple-red, about 15 mm. long, short-pedunculate, glabrous; calyx tube deeply constricted above the ovary, somewhat dilated above; sepals ovate-lanceolate, acuminate, slightly shorter than the tube; petals shorter than the sepals, pale; stamens shorter than the petals; berries black at maturity, very juicy, 5–6 mm. in diameter.

The junior author believes that *F. michoacanensis* would be better treated as a synonym of this species. The differences, if any, are slight and fugacious.

Fuchsia Skutchiana Munz, Proc. Cal. Acad. Sci. 25: 91. 1943.

Type collected in the region of Quezaltenango, Quezaltenango, 2,500 meters, *A. F. Skutch* 812. Mexico (Chiapas).

A shrub, similar to *F. tacanensis* in habit and foliage, but finely strigillose on the young branchlets, hypanthium, and sepals; leaves more finely strigose, on petioles 2–3 cm. long; pedicels 1.5–3 cm. long, strigillose; hypanthium not longer than broad in dried specimens, 2–3 mm. long; sepals equaling or slightly longer than the hypanthium, reflexed, 2.5–4 mm. long, white to pink, becoming red in age, the tips 1–1.5 mm. long; petals about equaling the sepals, white or pink, emarginate; style 4–5 mm. long; fruit black, 4–5 mm. in diameter.



FIG. 85. *Fuchsia splendens*. A, Habit; $\times 1$. B, Petal; $\times 5$. C, Showing insertion of petals; $\times 1$. D, An anther, from front and back; $\times 5$.

Fuchsia splendens Zucc. Flora 1882, pt. 2: Beibl. 102. 1832. *Platanito* (San Marcos). *Melocotoncito*.

Moist or wet, mixed, dense forest, terrestrial or epiphytic, sometimes in *Cupressus* forest, 2,000–3,500 meters; Jalapa; Jutiapa; Sacatepéquez; Chimaltenango; Sololá; Quiché; San Marcos; Huehuetenango. Mexico (Chiapas); Costa Rica.

A stout erect terrestrial shrub 2.5 meters high or less, or a small, usually pendent, epiphytic shrub, sparsely branched, the branches stout and thick, the bark of older branches brown, exfoliating, the young branches densely villous-hirsute with usually fulvescent hairs; leaves membranaceous, on long slender petioles, ovate or broadly ovate, 5–12 cm. long, acute or acuminate, usually rather deeply cordate at the base, sometimes rounded, puberulent above, somewhat paler beneath, densely or sparsely villous-hirsute; flowers large and showy, axillary near the ends of the branches, solitary, pendent on long slender peduncles, sparsely or rather densely pilose or short-pilose, 3–4 cm. long; calyx tube broad and thick, dilated upward, 8–10 mm. broad at the apex, bright red; sepals ovate, acuminate, green, half as long as the tube; petals pale green or yellow, half as long as the sepals; stamens yellow, much longer than the petals.

A handsome and decorative plant, similar in general appearance to *F. cordifolia*.

Fuchsia striolata Lundell, Contr. Univ. Mich. Herb. 4: 20. 1940.

Moist or wet, mixed forest, or sometimes growing with pines and *Abies*, 2,000–3,000 meters; Quezaltenango; San Marcos. Type from Volcán de Tacaná, Chiapas, *E. Matuda* 2765.

A rather slender shrub 1–2.5 meters high, the young branches closely puberulent, soon glabrate; leaves opposite, anisophyllous, firm-membranaceous, slender-petiolate, ovate to elliptic, 2.5–10 cm. long, acute or acuminate, acute or obtuse at the base, remotely denticulate, minutely puberulent or glabrate above, glabrous beneath, the nerves conspicuous, usually rather densely papillose on the lower surface; flowers small, axillary, solitary, the peduncles slender, puberulent, 12 mm. long or less; fruit globose, dull purple or almost black, about 7 mm. in diameter.

The known material of this species is inadequate for an understanding of it.

Fuchsia tacanensis Lundell, Contr. Univ. Mich. Herb. 4: 20. 1940.

Mountain forest, 2,000–3,000 meters; Sololá (Volcán de Santa Clara); doubtless also in San Marcos. Southern Mexico; type from Volcán de Tacaná, Chiapas, *E. Matuda* 2399.

A slender, much branched shrub, the young branches finely puberulent, the older ones ferruginous or dirty brown; leaves mostly opposite, on long slender petioles, membranaceous, ovate or elliptic-ovate, 2.5–7.5 cm. long, 1.5–4 cm.

broad, acute or acuminate, acute to obtuse at the base, remotely denticulate or almost entire, sparsely pilose, principally on the nerves, with slender, spreading, rather stiff hairs, or almost glabrous, especially on the upper surface; flowers glabrous, axillary, solitary, about 15 mm. long, the peduncles slender, 2 cm. long or usually shorter; calyx tube deeply constricted above the ovary; sepals acuminate, 6.5 mm. long, somewhat longer than the calyx tube; petals ovate, 3.5 mm. long; stamens shorter than the petals.

Fuchsia tetradactyla Lindl. Jour. Hort. Soc. 1: 304. 1846. *F. Seleriana* Loes. Verh. Bot. Ver. Brandenb. 55: 179. 1913 (type from Chaculá, Huehuetenango, *Seler* 2844). *Carmela* (Guatemala).

Moist or dry, often rocky thickets or in forest, especially oak forest, 1,000–3,000 meters; Baja Verapaz; Zacapa; Jalapa; Guatemala; Sacatepéquez; Chimaltenango; Sololá; Huehuetenango; Quezaltenango. Oaxaca and Chiapas and perhaps elsewhere in southern Mexico.

A shrub 1–2.5 meters high or often lower and densely branched, the young branches finely puberulent, the older ones brown; leaves opposite or ternate, on long slender petioles, ovate to broadly ovate-rhombic or elliptic, mostly 3–8.5 cm. long, acute or short-acuminate, broadly cuneate at the base, thin, remotely denticulate, often subentire, finely and rather sparsely puberulent on both surfaces, paler beneath, the nerves conspicuous; flowers on peduncles 8–17 mm. long, axillary, solitary or binate, 10–15 mm. long, finely and inconspicuously puberulent, rose-purple or bright red; sepals ovate-triangular, subulate-acuminate, 4 mm. long; petals white or whitish, orbicular, 3 mm. long; stamens shorter than the petals; berries subglobose, glossy black when ripe, as much as 9 mm. long when fresh but smaller in the dry state.

In this as in some of the other small-flowered fuchsias the flowers are unisexual, and most of the specimens of *F. tetradactyla* bear staminate flowers only.

GAURA L.

Reference: Philip A. Munz, Studies in Onagraceae XI. A revision of the genus *Gaura*, Bull. Torr. Bot. Club 65: 105–122; 211–228. 1938.

Annual or perennial herbs, usually pubescent; leaves alternate, sessile or petiolate, entire or dentate; flowers rather large or small, white or pink, in spike-like or subcapitate racemes, more or less symmetric, usually irregular, 4-parted or sometimes 3-parted; calyx tube obconic or cylindric; stamens twice as many as the petals, declinate, all fertile, each usually with a scale at the base of the filament; stigma more or less deeply 4–3-lobate, provided at the base with a cup-like indusium; ovary 4–3-celled, or the partitions obsolete; ovules solitary or rarely 2 in each cell; style filiform, deflexed; fruit ligneous, small, 4–3-angulate, indehiscent, 4–3-seeded or by abortion 1-seeded.

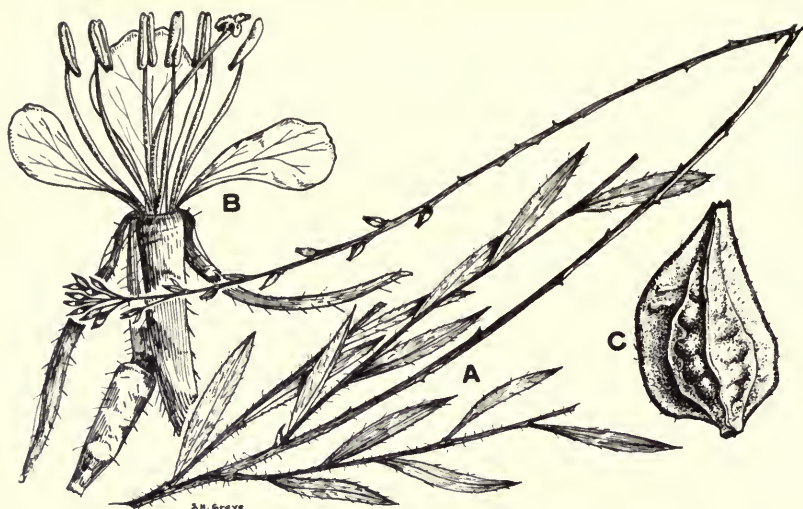


FIG. 86. *Gaura tripetala*. A, Habit of a portion of plant; $\times \frac{1}{2}$. B, Flower; $\times 5$. C, Mature fruit; $\times 3\frac{1}{2}$.

About 18 species, all American, mostly in Mexico and western United States, chiefly in temperate or warm-temperate regions, only one of them extending to Central America.

***Gaura tripetala* Cav. Icon. Descr. Pl. 4: 66, t. 396. 1797.**

At about 2,250 meters; Chimaltenango (near Tecpán, *G. J. Goodman* 3500); reported by Loesener as collected on Cerro "Chi Lahuh K'ih" near Quezaltenango, Quezaltenango, about 2,400 meters, *Seler* 3146. Southwestern United States; Mexico.

Plant annual or a short-lived perennial, usually branched from the base, the stems rather slender, simple or branched, ascending, hirsute, often reddish, 20–60 cm. long; basal leaves oblanceolate, sinuate-dentate, 4–8 cm. long, narrowed at the base into short marginate petioles, more or less pubescent, especially on the veins and margins; cauline leaves lanceolate to oblong-linear, entire to sinuate-dentate, nearly or quite sessile, 2–5 cm. long, glabrate to pubescent, acuminate to obtuse; flower spikes 10–30 cm. long; calyx tube 4–5 mm. long, slender; sepals 3, narrow, 4–6 mm. long; petals 3, oblanceolate, 3–4 mm. long, red in withering; stamens 6, subequal; capsule ovoid-pyramidal, sharply 3-angulate, 4–8 mm. long, each face with a median costa and transverse wrinkles.

The plant must be rare in Guatemala, and we have not seen it growing.

One or more species of *Godetia* sometimes are grown for ornament in gardens and parks of Guatemala. They are natives of Cali-



FIG. 87. *Gongylocarpus rubricaulis*. A, Habit; $\times \frac{1}{2}$. B, Flower; $\times \pm 8$.

fornia, slender annuals with narrow leaves and very large and handsome, showy flowers in various shades of pink, red, crimson, or white.

GONGYLOCARPUS Schlechtendal & Chamisso

Slender erect annuals, glabrous or nearly so; leaves alternate above, opposite below, membranaceous, petiolate, denticulate, often marked with conspicuous lines (cystoliths?); flowers very small, solitary in the upper leaf axils; ovary adnate to the branch, long and almost filiform; sepals 4, narrow, spreading; petals 4, entire, inserted in the mouth of the calyx tube; stamens 8, the anthers ovate; ovary 2-3-celled, the style filiform, short, the stigma capitate; ovules solitary in the cells; fruit somewhat drupaceous or nut-like, ligneous, 2-celled, 2-seeded; embryo straight, the cotyledons flat.

Probably the genus consists of only the following species.

Gongylocarpus rubricaulis Schlecht. & Cham. Linnaea 5: 558. 1830.

At 1,350-2,300 meters; Escuintla; Sacatepéquez; Huehuetenango. Mexico.

Plants slender, erect, usually 20-50 cm. high, sometimes taller, simple or branched, appearing glabrous but usually very minutely appressed-puberulent

on the inflorescence and young stems; leaves mostly opposite, slender-petiolate, lanceolate or ovate-lanceolate, commonly 3–7.5 cm. long, long-acuminate, acute at the base, usually reddish or purplish on the margins and sometimes elsewhere, the lateral nerves conspicuous; calyx tube filiform, 4–10 mm. long; sepals broadly linear, 4 mm. long, usually reddish or purplish, especially within, spreading or reflexed; petals very small, early deciduous; fruit ovoid, somewhat angulate, dark red or purplish, 4 mm. long.

This is a curious plant with most unusual fruits, which have the appearance of insect galls.

HAUYA De Candolle

References: J. Donnell Smith and J. N. Rose, Contr. U. S. Nat. Herb. 16: 287–296, f. 45–54. 1913. Philip A. Munz, The Genus *Hauya* (Onagraceae), Aliso 4: 492–499. 1960.

Shrubs or small or medium-sized trees, pubescent or glabrous; leaves alternate, membranaceous or thicker, petiolate, entire; flowers large, axillary, solitary, sessile or pedunculate, white at first, turning to pink or red in age; calyx tube long and slender, terete; sepals 4, narrow, deciduous; petals 4; stamens 8, the filaments long and slender, the anthers linear, elongate, not revolute, sometimes twisted in age, aristate-appendaged at each end; style stout, straight, elongate, the stigma globose or ellipsoid; ovary 4-celled; ovules numerous, ascending, biseriate along the inner angle of the cell; seeds numerous, ascending, the testa coriaceous, produced above into an oblong wing; cotyledons oblong, compressed, flat, the radicle very short.

There are about 14 species of this attractive genus in Mexico and Central America, according to Munz. During their sometimes brief flowering season the trees and shrubs of this genus are often moderately showy, having sometimes an abundance of large flowers. The flowers are white when they open but soon change to pink or even dull red in withering. The plants are seldom seen in flower in the course of ordinary collecting, and seem to produce all their flowers about the time that the first good rains arrive.

In spite of a recent revision of *Hauya* by Munz in which he attributes 8 species to Guatemala and British Honduras it seems unlikely that there are really more than 3 or 4, although with an exception or two we have accepted Munz' evaluation of them. *Hauya Heydeana* and *H. Lundellii* are amply distinct species. All the rest are closely allied and curiously enough the types of too many of them come from the vicinity of the volcano of Acatenango. Leaving Antigua on the road to Las Calderas, from which locality the ascent of Acatenango and Fuego usually is started, the old road follows a small barranco in which *Hauya* bushes and small trees are plentiful.

It is suspected that, in spite of the names applied to type localities, all or most of the types came from this ravine. It is rather fantastic that several closely related species, separated by dubious characters, should occur in this one ravine or in any of the other ones in the near vicinity.

Leaves glabrous or nearly so, acute or attenuated to the base, more than twice longer than broad.

Leaves lanceolate or narrowly oblong-lanceolate, acute or obtuse at the apex.

H. Heydeana.

Leaves narrowly oblanceolate-oblong or narrowly elliptic-oblong, abruptly acute or short-acuminate. *H. Lundellii.*

Leaves abundantly, usually densely, pubescent or tomentose, ovate or broader, less than twice longer than broad.

The sepal tips or appendages 2-5 mm. long.

Sepals 1.5-2 cm. long; the capsule valves distinctly keeled dorsally.

H. cornuta.

Sepals 3-7 cm. long; the capsule valves plane dorsally.

Ovary and floral tube velvety pubescent. *H. microcerata.*

Ovary and floral tube puberulent. *H. Matudai.*

The sepal tips or appendages 8-15 mm. long.

Capsules puberulent; sepals 3.5-5.5 cm. long. *H. ruacophila.*

Capsules "densely grayish strigose"; sepals 6-7 cm. long. *H. Rodriguezii*

Hauya cornuta Hemsl. Diag. Pl. Mex. 1: 13. 1878; Biol. Cent. Am. Bot. 5: t. 29, f. 3. 1888.

Known definitely only from along the Río Guacalate, Sacatepéquez, at about 1,500 meters, the type collected by *Salvin*.

Shrubs or small trees, the young branches finely pubescent; leaves with short petioles 6-12 mm. long, the blades elliptic to oblong-lanceolate, short acuminate, acute or rounded at the base, puberulent above and tomentulose below; floral tube 3-3.5 cm. long, apparently somewhat 4-angled; the sepals 1.5-2 cm. long, the appendages about 4 mm. long; petals round and about 2 cm. long; capsule about 22 mm. long, the valves with a short dorsal rib.

We have seen no recent material that agrees exactly with the description of this species, which is most unsatisfactory. However, the plate cited looks much like *H. microcerata* or *H. Matudai* and it is conceivable that both could belong here as synonyms.

Hauya Heydeana Donn.-Sm. Bot. Gaz. 18: 3. 1893.

Moist or wet, mountain forest, 450-1,500 meters; Alta Verapaz; Quiché (type from Belejú, *Heyde & Lux* 2935); Huehuetenango.

A glabrous tree of 6-12 meters, the branches rather slender but stiff, reddish or purplish, densely leafy; leaves subcoriaceous, apparently persistent, on slender petioles 1-2 cm. long, lanceolate or narrowly oblong-lanceolate, sometimes oblong-



FIG. 88. *Haüyia Heydeana*. A, Branch of plant; $\times \frac{3}{4}$. B, Petal; $\times 2$. C, Capsule; $\times 1$. D, Seed; $\times 5$.

oblongate, 6–12 cm. long, rounded or obtuse at the apex, sometimes somewhat narrowed to the apex, acute or attenuate at the base, usually apiculate, the lateral nerves very slender and inconspicuous; peduncles slender, 1–3.5 cm. long; flowers white, 6–7 cm. long; calyx lobes linear or broadly linear, about equaling the tube or longer, the tips very short and obtuse; petals equaling but much broader than the calyx lobes; capsule 2–2.5 cm. long, terete, the valves not evidently costate.

Hauya Lundellii Standl. Field Mus. Bot. 17: 204. 1937.

Known only from the type, Valentín, El Cayo District, British Honduras, on a limestone hill in advanced forest, *C. L. Lundell* 6318.

A tree of 23 meters, the trunk 35 cm. in diameter, the young branches green, sparsely and minutely puberulent at first, soon glabrate; leaves firm-membranaceous, on slender petioles 1–3 cm. long, narrowly oblongate-oblong or narrowly elliptic-oblong, 7–12.5 cm. long, 2.5–4.5 cm. broad, usually abruptly acute or short-acuminate, attenuate to the base, glabrous and papillose-punctulate on the upper surface, glabrous beneath or sparsely pilose along the costa; peduncles 6 mm. long or shorter, the ovary glabrous; calyx glabrous, pale green outside, the tube 4 cm. long, the lobes 3.5 cm. long, subobtuse and not appendaged at the apex, linear-lanceolate; capsule narrowly clavate, 4–4.5 cm. long, 1 cm. thick, obtuse, terete, slightly narrowed toward the base.

The trunk is described as light tan in color and fluted.

Hauya Matudai Lundell, Am. Midl. Nat. 19: 431. 1938.

Brushy slopes or oak or pine forest, 800–1,600 meters; Jutiapa; Jalapa; Guatemala. Mexico; El Salvador and Honduras.

Shrubs or sometimes small trees 1–6 meters tall, young branches puberulent or tomentulose, becoming glabrous; leaves on slender tomentulose petioles 0.5–3 cm. long, oblong or oblong-elliptic to broadly ovate, obtuse, acute or short-acuminate, densely puberulent or tomentulose on both surfaces to glabrate above, 2–12 cm. long and 1.2–8 cm. broad; floral tube 5–6 cm. long, more or less puberulent; sepals 4–4.7 cm. long, terminating in appendages 3–5 mm. long; capsules ellipsoidal, terete, 2–4 cm. long and to 1 cm. in diameter, puberulent to tomentulose.

We have seen no flowering material of this species and it is probable that some material determined as *H. microcerata* by Munz belongs here, if the two species can be separated. The relatively small capsules may be distinctive but until more is known about the genus we cannot be sure.

Hauya microcerata Donn.-Sm. & Rose, Bot. Gaz. 52: 46. 1911. *H. Hemsleyana* Loes. Verh. Bot. Ver. Brandenb. 55: 176. 1913 (type collected near Alotenango, Sacatepéquez, *Seler* 2562). *H. pedicellata* Loes. l.c. 177 (type from the pyramid Casa del Sol, Quen Santo, *Seler* 2813). *Chilón* (fide Aguilar); *guayabillo* (Huehuetenango); *canutillo* (Huehuetenango).

Moist or dry, brushy or forested hillsides, often in ravines, 850–2,000 meters; Baja Verapaz (type from Santa Rosa, *Tuerckheim* 1423); Jutiapa; Guatemala; Sacatepéquez; Chimaltenango; Huehuetenango. Mexico (Chiapas).

A shrub or tree 2–9 meters high, the bark smooth, pale brown, resembling that of *Psidium*; the branchlets thick and stout, very densely pilose with grayish or brownish, spreading or ascending hairs; leaves deciduous, membranaceous, on slender petioles as much as 4 cm. long, mostly elliptic or oval, sometimes obovate or oblong-obovate, 7–11 cm. long, 4–7 cm. broad, acute to rounded at the apex and abruptly acute or short-acuminate, pilose or glabrate above, usually pale beneath, densely pilose-tomentose, broadly rounded to subacute at the base, the nerves conspicuous beneath; flowers sessile or short-pedunculate; calyx tube densely pilose, 8–10 cm. long, the lobes 3.5–4 cm. long, broadly linear, the appendages 3–4 mm. long; petals oval, about 3 cm. long and 2 cm. broad; anthers 18 mm. long; capsule hard and ligneous, 4.5–5 cm. long, terete, densely pilose or tomentose.

This tree is plentiful about Guatemala, especially in the big ravine near La Aurora. It is a beautiful sight when covered with the large, pure white, delicate flowers, which appear at the beginning of the rainy season when the oaks are developing new leaves and the whole aspect of the forest reminds one of a northern spring. In its type locality at Santa Rosa the tree grows in the very dry thickets with *Juniperus* and oaks. This species has been introduced into cultivation in southern California. It has been reported from Guatemala as *H. elegans* DC., a Mexican species.

Hauya Rodriguezii Donn.-Sm. Bot. Gaz. 18: 3. 1893.

Known only from the type, collected at Acatepeque, lower slopes of Volcán de Fuego, Sacatepéquez, 1,300 meters, *J. D. Smith* 2529.

A tree of 10 meters with a thick trunk, the young branches slightly pubescent at first, glabrate in age; leaves on petioles 1–3 cm. long, rhombic-oval to elliptic, 11–12 cm. long, abruptly acuminate, rounded or obtuse at the base, grayish-pubescent when young, glabrate in age except along the nerves, the lateral nerves conspicuous; flowers sessile, 13–15 cm. long; ovary densely grayish-pubescent; calyx tube 6–7.5 cm. long, the lobes equaling the tube or somewhat shorter, the slender appendages 10 mm. long or more; petals oval, two-thirds as long as the calyx lobes; capsule about 5 cm. long, terete.

Hauya ruacophila Donn.-Sm. & Rose, Bot. Gaz. 52: 47. 1911 (type from Volcán Acatenango, Sacatepéquez, *Donnell Smith* 2528); *H. quercetorum* Donn.-Sm. & Rose, l.c. (type from Santa Rosa, *Heyde & Lux* 4479); *H. longicornuta* Loes. Fedde Rep. Sp. Nov. 12: 236. 1913; *H. longicornuta* var. *oblongifolia* Loes. l.c. 237 (type from Santa Rosa, *Heyde & Lux* 2936); *H. longicornuta* var. *ovalifolia* Loes. l.c. 237 (type from Sacatepéquez, *Donnell Smith* 2528).

Usually on brushy hillsides or in oak or pine forest, 800–2,000 meters; Santa Rosa; Jalapa; Jutiapa; Guatemala; Sacatepéquez; Chimaltenango; Sololá; Quiché; Huehuetenango. El Salvador; Honduras.

A shrub or small tree of 1–8 meters, often forming dense thickets, the trunk as much as 25 cm. in diameter, the pale brownish, smooth bark resembling that of guava, the branchlets finely and densely puberulent or tomentulose; leaves apparently deciduous, on slender petioles 1–3 cm. long, rather thick, rounded-oval to elliptic, oval-oblong, or rarely obovate, 4–15 cm. long, usually broadly rounded to very obtuse at the apex, sometimes abruptly short-pointed, rounded or emarginate at the apex, often with revolute margins, usually densely and finely puberulent and pale on the upper surface, sometimes glabrate in age, grayish beneath, densely tomentulose with a close appressed tomentum, the nerves conspicuous, often impressed on the upper surface, very prominent beneath; flowers sessile; calyx densely pubescent or glabrate, the tube slender, 7–10 cm. long, the lobes 3.5–5 cm. long, the appendages 10–13 mm. long; petals about 3–4.5 cm. long; anthers 12 mm. long; capsule 2–6 cm. long, hard and ligueous, terete, tomentulose or glabrate; seeds lanceolate, 15 mm. long, 5 mm. broad, acute, conspicuously winged.

The local name “*guayabillo*” alludes to the fact that the bark is similar to that of guava (*Psidium*). This shrub is exceedingly abundant on the hillsides in the immediate vicinity of Jutiapa, where it forms in some places dense, low, almost pure stands, generally two meters high or less. We are unable to follow Dr. Munz in maintaining *H. ruacophila* and *H. quercetorum* as distinct species.

JUSSIAEA L.

Reference: Philip A. Munz, Studies in Onagraceae XII. A revision of the New World species of *Jussiaea*, Darwiniana 4: 179–284, tt. 1–20. 1942.

Herbs or suffrutescent plants, annual or perennial, glabrous or pubescent, usually growing in wet soil, rarely in water; leaves alternate, simple, membranaceous or rarely coriaceous; flowers 4–6-parted, yellow or white, axillary, on long or short pedicels, with 2 bractlets on the pedicel or hypanthium; hypanthium elongate, cylindric, prismatic, or obconic, adnate to the ovary and barely or not at all prolonged beyond it; sepals acute, persistent; flowers regular, the petals 4–5 (6), very thin, caducous; stamens biseriate, twice as many as the petals and inserted with them under the margin of the usually pilose epigynous disk; filaments short, the anthers ovate or oblong; ovary 4–6-celled, with central placenta; style simple, more or less produced above the disk, the stigma capitate, 4–6-lobate, the ovules numerous; capsule cylindric, prismatic, or obconic, 4–6-celled, loculicidally and septicidally dehiscent; seeds pluriseriate, naked, with a prominent raphe, or uniseriate and surrounded by an endocarp.

The genus contains some 40 species in temperate and tropical regions. One or two other species are to be found in southern Central America and Panama. We have followed Dr. Munz' revision of the genus, cited above, quite closely in most matters. Two species not presently known in Guatemala are placed in the flora for they have been found quite near the Guatemalan border in Chiapas and are to be expected in our range.

Capsule conspicuously quadrangular, or sometimes inconspicuously if at all angulate but then short and obconic.

Plants floating or in the edges of shallow ponds; petioles usually about as long as or much longer than the leaf blade.

Petioles usually more than twice as long as the dentate leaf blade.

J. sedioides.

Petioles little if any longer than the entire leaf blade. *J. inclinata.*

Plants terrestrial but often in wet places; petioles very much shorter than the leaf blade.

Stems narrowly winged; capsules winged on the angles. *J. decurrens.*

Stems and capsules not winged.

Capsules and flowers sessile. *J. erecta.*

Capsules and flowers pedunculate.

Leaves sessile, rounded or obtuse at the base. *J. nervosa.*

Leaves conspicuously petiolate, acute to the base.

Leaf veins 20-30 on each side of the mid-rib and connected by smaller parallel and unbranched nerves; petioles mostly 15-40 mm. long.

J. foliobracteolata.

Leaf veins 8-20 on each side of the mid-rib and connected by smaller veins that tend to fork; petioles mostly or all less than 15 mm. long. *J. peruviana.*

Capsule terete or nearly so, not angulate, long and narrow.

Sepals 4.

Sepals 2.5-3.5 mm. long; capsules about 2 cm. long. *J. linifolia.*

Sepals 8-14 mm. long; capsules 2.5-5 cm. long. *J. suffruticosa* var.

Sepals 5-6.

Plants terrestrial, in wet soil, erect, densely pubescent.

Leaves lanceolate to lance-linear; sepals 5-8 mm. long. *J. leptocarpa.*

Leaves ovate to elliptic; sepals 3.5-5 mm. long. *J. affinis.*

Plants aquatic, floating or rooting in water, the stems usually floating or at least in part prostrate or repent, sometimes growing on mud.

Petals white; leaf blades almost orbicular; floating plants with numerous spongy pneumatophores arising from the nodes. *J. natans.*

Petals yellow; leaf blades usually definitely longer than wide; plants not with tufts of pneumatophores from the nodes.

Flowering stems usually floating or creeping; leaves mostly oblong or obovate-oblong; bractlets deltoid; capsules 2-3 mm. thick.

J. repens var.

Flowering stems erect; leaves of the erect stems lance-linear or narrowly oblong; bractlets lanceolate; capsules 3-4 mm. thick.

J. uruguayensis.

Jussiaea affinis DC. Prodr. 3: 53. 1828.

In marshes or swamps, sometimes in *Manicaria* swamps, at or little above sea level; Izabal; Suchitepéquez. British Honduras to Panama; Lesser Antilles; South America.

An erect herb 1.5 meters high or less, usually much branched, the stems hirsute-pilose with brownish hairs; leaves membranaceous, on petioles 1.5 cm. long or shorter, ovate to elliptic, 2–12 cm. long, 3–25 mm. broad, abruptly acute or obtuse, abruptly acute or attenuate at the base, entire, usually densely short-pilose on both surfaces; flowers solitary in the leaf axils, the pedicels 1–3 mm. long; bractlets inserted at the base of the hypanthium, scale-like, triangular; hypanthium short-hirsute, linear, cylindric, 5–6-nerved, 10–12 mm. long; sepals 5–6, lance-ovate, 3.5–5 mm. long; petals yellow, 6–8 mm. long, narrowly obovate; anthers 1 mm. long; capsule cylindric, 2–3.5 cm. long, 2.5–3 mm. thick; seeds yellowish, 1 mm. long, the raphe one-third to one-fourth the width of the body, the seed enveloped in the hippocrepiform corky endocarp.

Jussiaea decurrens (Walt.) DC. Prodr. 3: 56. 1828. *Ludwigia decurrens* Walt. Fl. Carol. 89. 1788.

Wet meadows or savannas, 1,500 meters or less; Izabal; Chiquimula. South and southeastern United States; southern Mexico; Honduras to Panama; West Indies. Widely distributed in South America.

An erect annual, usually much branched, commonly less than a meter high; roots often spongy and inflated; stems mostly 4-winged; leaves sessile or nearly so, lanceolate to linear, 2–12 cm. long, long-attenuate at each end, ciliate, with scattered minute hairs beneath, or almost glabrous, entire; flowers solitary in the upper leaf axils, the pedicels 1–5 mm. long, 4-angulate or winged; bractlets inserted at the base of the hypanthium, deltoid-ovate, less than 1 mm. long; hypanthium narrowly obconic, conspicuously 4-angulate and usually winged, minutely puberulent, 8–10 mm. long; sepals 4, ovate-lanceolate, acuminate, 7–10 mm. long; petals yellow, obovate, sessile, entire, 8–12 mm. long; anthers 1 mm. long; style 1.5–2 mm. long; capsule long and narrow, clavate-pyramidal, narrowly 4-winged, 12–20 mm. long; seeds subcylindric, obtuse at each end, 0.3–0.4 mm. long, the raphe evident.

Jussiaea erecta L. Sp. Pl. 388. 1753.

Wet fields or marshes, often along streams or on sand bars, sometimes in savannas, 900 meters or less; Alta Verapaz; Izabal; Zacapa; Jutiapa; Retalhuleu; San Marcos; probably in all the lowland departments. Southern Florida; Mexico; British Honduras to El Salvador and Panama; West Indies; South America; Old World tropics.

An erect annual, commonly a meter high or less, usually much branched, the branches erect or ascending, glabrous or nearly so, angulate by the decurrent leaf bases; leaves on petioles 2–15 mm. long, broadly to narrowly lanceolate, 5–13 cm.

long, 1–3 cm. broad, acute or attenuate at each end, glabrous or nearly so; flowers solitary in the upper leaf axils, subsessile or on pedicels as much as 2 mm. long; bractlets inserted near the base of the hypanthium, scale-like, 0.5 mm. long; hypanthium oblong-linear, 4-angulate, puberulent, 7–10 mm. long; sepals 4, lance-ovate, acute, 3–4 mm. long; petals yellow, obovate, sessile, 4–5 mm. long; disk almost glabrous; anthers 0.6 mm. long; style 1 mm. long; capsule 4-angulate, oblong-linear, puberulent, 12–16 mm. long, 2–2.5 mm. thick; seeds yellow-brown, cylindric-ovoid, 0.4 mm. long, with an evident raphe.

The local name “*rodiguera*” is reported from Veracruz.

***Jussiaea foliobracteolata* Munz, Darwiniana 4: 228. 1942.**

Along streams or marshes. Mexico (Chiapas); Costa Rica; West Indies; South America.

Suffruticose plants 1–2 meters tall, pubescent especially in the inflorescence, becoming glabrous; leaves with petioles 1–4 cm. long, the blades elliptic or broadly elliptic, acute or acuminate, glabrous or nearly so except on the veins below, 7–20 cm. long and 3–7 cm. broad; hypanthium with lanceolate to broadly ovate, foliaceous bracteoles well above the base, from 1 cm. in flower to 2.5 cm. long in fruit; sepals narrowly deltoid, glandular-serrulate, acuminate, about 1 cm. long; anthers 2–3 mm. long; disk somewhat elevated, 1–1.5 mm. high, pilose; capsule somewhat quadrangular, 1.5–2 cm. long.

Not presently known from Guatemala but certainly to be found there.

***Jussiaea inclinata* L. f. Suppl. 577. 1871.**

Floating or in the edges of shallow ponds. Central and southern Mexico; West Indies; South America.

Herbs in shallow ponds or floating, the submerged stems inflated, sparingly branched, rooting at the nodes; leaves submerged, sessile or nearly so, linear to linear-oblongate, 1–3 cm. long and 0.2–0.7 cm. broad, aerial leaves narrowly ovate to obovate, obtuse, cuneate to the base, glabrous, pellucid-punctate, 2–8 cm. long and 1–3 cm. broad; flowers small, occasional in axils of terminal leaves; hypanthium obconic, quadrangular, glabrous, 5–10 mm. long; sepals 4, ovate, obtuse or acute, 5–10 mm. long and 2–6 mm. broad; petals obovate, yellow, 6–14 mm. long; disk plane, hirsute; stamens somewhat unequal, the anthers 2–3 mm. long; stigma subcapitate, 4-lobed; capsule quadrangular and subulate, obconic, 1–2 cm. long and 3–4.5 mm. in diameter.

The species is not presently known from Guatemala but is found near by in Chiapas and should be found in Guatemala.

***Jussiaea leptocarpa* Nutt. Gen. Pl. 1: 279. 1818. *J. pilosa* HBK. Nov. Gen. & Sp. 6: 101, t. 532. 1823. *J. pilosa* var. *robustior* Donn.-Sm. Bot. Gaz. 16: 6. 1891 (type from Dueñas, Sacatepéquez, *J. D. Smith* 2123).**

Marshes, stream banks, wet fields or thickets, sometimes on sand bars along streams, 1,500 meters or less, mostly at 900 meters or lower; Petén; Alta Verapaz; Izabal; El Progreso; Zacapa; Chiquimula; Jutiapa; Santa Rosa; Escuintla; Sacatepéquez; Quiché; Suchitepéquez; Retalhuleu; San Marcos. Southern United States; Mexico; British Honduras to El Salvador and Panama; West Indies; South America.

Plants erect, annual, usually a meter high or lower, much branched, the branches ascending, the younger branches angulate, glabrous to pilose (pilose in Guatemalan material), often also puberulent; leaves very numerous, on petioles 2 cm. long or shorter, lanceolate to almost linear or nearly ovate, 2–15 cm. long, 2–30 mm. broad, acute or obtuse, acute or attenuate at the base and often sessile, entire, generally pilose or puberulent; flowers solitary in the upper leaf axils, numerous, the pedicels 1–15 mm. long; bractlets inserted at the apex of the pedicel, scale-like, 0.5 mm. long; hypanthium linear, subterete, 5–6-angulate, 10–16 mm. long, pilose or puberulent to glabrous; sepals 5–6, lanceolate, acuminate, 5–8 mm. long; petals yellow, rounded-obovate, 5–10 mm. long, short-unguiculate; disk pilose; anthers 1 mm. long; style 2–4 mm. long; capsule cylindric, 10–12-nerved, straight or curved, 1.5–5 cm. long, 2–3.5 mm. thick, usually puberulent or pilose; seeds uniseriate, compressed-ovoid, yellowish, 1 mm. long, surrounded by a hippocrepiform corky endocarp but free from it; raphe one-sixth to one-eighth as wide as the body of the seed.

There is recorded also from Guatemala what is possibly nothing more than a sporadic variant, similar to the species except that it lacks long spreading hairs. It is forma *biacuminata* (Rusby) Munz.

Jussiaea linifolia Vahl, *Eclog. Amer.* 2: 32. 1798. *Clavillo*.

Marshes or ditches, wet or moist thickets, or on sand bars along streams, 300 meters or less; Izabal; Santa Rosa; Escuintla; Suchitepéquez; Retalhuleu. Southern Mexico; El Salvador; Nicaragua; Costa Rica; Cocos Island; West Indies; South America; Africa and Asia.

An erect annual a meter high or less, freely branched or almost simple, nearly glabrous, the branches angulate below the decurrent leaf bases; leaves sessile or on petioles 2–12 mm. long, lanceolate to narrowly ovate, 3–9 cm. long, acute or short-acuminate, narrowed at the base, membranaceous, subentire; flowers white, numerous, solitary in the upper leaf axils, sessile or nearly so; bractlets triangular, scale-like, 0.5–1 mm. long, inserted high up on the hypanthium; hypanthium linear, puberulent, 4-costate, 8 mm. long; sepals 4, lanceolate, acuminate, 2.5–3.5 mm. long; petals 4, elliptic, acute, 3 mm. long; anthers 0.5 mm. long; style 1.5 mm. long; capsule linear, subterete, 18–25 mm. long, 1.5–2 mm. thick; seeds usually pluriseriate above, oblong-ovoid, 0.5 mm. long, yellowish, with an evident raphe; lower seeds uniseriate.

Jussiaea natans Humb. & Bonpl. *Pl. Aequin.* 1: 16, *t. 3, f. B.* 1808.

Floating in slow streams or lakes, 2,000 meters or less, chiefly at low elevations; Izabal; Jutiapa; Quiché. Mexico; El Salvador and Honduras to Panama; South America.

Plants perennial, glabrous, somewhat succulent, floating on quiet water or sometimes rooting on muddy shores; some of the roots slender, much branched, others apparently converted into spongy masses or pneumatophores 2-3 mm. thick and fusiform; stems glabrous, sparsely branched, very leafy, scarcely angulate; leaves on petioles 1-4 cm. long, orbicular to short-oblong, mostly 1.5-5 cm. long, very obtuse or rounded at the apex, acute at the base or abruptly contracted, entire; flowers solitary in the leaf axils, on pedicels 1-5 cm. long; bractlets inserted at the apex of the pedicel, squamiform, 0.5 mm. long; hypanthium linear, cylindric, 9-12 mm. long; sepals usually 5, lance-ovate, 4-6 mm. long, acute; petals white with a yellow basal spot, oblong-obovate, 8-14 mm. long, with a short broad claw; disk pilose; anthers 1-2 mm. long; style 4-7 mm. long; capsule cylindric, sometimes curved, 2-3 cm. long, 2.5-3 mm. thick, sometimes nodulose; seeds uniseriate, completely invested by the lustrous, hard, angular, pale brown endocarp, this 1.5 mm. long.

Called "*lechuga*" and "*berro*" in Honduras.

Jussiaea nervosa Poir. in Lam. Encycl. Suppl. 3: 199. 1813.
Ludwigia hondurensis Standl. Field Mus. Bot. 8: 146. 1930 (type from Siguatepéque, Honduras).

In wet soil, usually in savannas or open pine forest, at or near sea level; Izabal. British Honduras; Honduras. Widely distributed in South America.

Plants stiffly erect, 2 meters high or lower, often suffrutescent, sparsely branched, the young branches puberulent or short-pilose; leaves sessile or nearly so, coriaceous, often crowded, reduced in size upward, lanceolate to oblong-ovate or broadly linear, acute or obtuse, rounded or obtuse at the base, glabrous or pubescent, entire, the lateral nerves very prominent beneath, the principal leaves 3-9 cm. long and 0.5-3 cm. broad; flowers solitary in the axils of the upper leaves, on pedicels 1-2 cm. long; bractlets inserted at the apex of the pedicel, linear, 0.5-2 mm. long; hypanthium obconic, 4-costate, 4-8 mm. long; sepals 4, deltoid-ovate, 6-9 mm. long, acuminate; petals sulphur-yellow, rounded-obovate, 1-2 cm. long; disk pilose; anthers 3-4 mm. long; style 1.5-2 mm. long; capsule narrowly obconic to cylindric-obconic, 4-angulate, 1-1.5 cm. long, 4-6 mm. broad; seeds oblong, lustrous, yellowish, 1 mm. long, the raphe evident.

Jussiaea peruviana L. Sp. Pl. 388. 1753. *Hierba de clavo*.

Marshes, open swamps, or wet thickets, sometimes along the margins of streams, 1,700 meters or less; Alta Verapaz; Baja Verapaz; Chiquimula; Jalapa; Santa Rosa; Guatemala; Sacatepéquez; Suchitepéquez; San Marcos. Southern Florida; southern Mexico; El Salvador and Honduras to Panama; West Indies; South America. Apparently introduced in the Old World.



FIG. 89. *Jussiaea peruviana*. Branch of plant; $\times \pm \frac{1}{4}$.

Plants herbaceous or often woody below, generally erect and 1-2 meters high, sometimes much more elongate and reclining or clambering over other plants, sparsely or densely hirsute-pilose throughout, the pubescence usually brownish or fulvous; leaves membranaceous or thick, on very short petioles, ovate-elliptic or lance-elliptic, mostly 5-15 cm. long and 1.5-5 cm. broad, acute or acuminate at each end, entire, scabrous-puberulent to soft-pilose, especially beneath; flowers solitary in the upper leaf axils, yellow; pedicels 2-3.5 cm. long at anthesis; bractlets inserted at the apex of the pedicel or on the base of the hypanthium, lanceolate or oblanceolate, 5-12 mm. long; sepals usually 4, lanceolate, acuminate, 10-18 mm. long; petals rounded-obovate, 12-27 mm. long, emarginate, short-unguiculate; anthers 3-4.5 mm. long; disk pilose, the style 1 mm. long; capsule 4-angulate, obconic, 12-30 mm. long, 8-10 mm. broad; seeds light brown, compressed-obovoid, 0.6-0.8 mm. long, the raphe one-fifth to one-fourth the width of the body.

Called "*flor de Santa Cruz*" in El Salvador. This has the largest flowers of any of the Central American species of *Jussiaea* and at times is a rather showy plant; none of the plants of this genus are particularly handsome.

Jussiaea peruviana* var. *glaberrima Donn.-Sm. Bot. Gaz. 16: 6. 1891.

Wet fields or thickets, 500–1,800 meters; Escuintla; Sacatepéquez (type from Dueñas, *J. D. Smith* 2130); Chimaltenango. Dominican Republic; Colombia; Venezuela.

Differing from the typical form of the species (above) only in being glabrous or nearly so throughout.

***Jussiaea repens* L. var. *peploides* (HBK.) Griseb. Cat. Pl. Cub. 107. 1866. *J. peploides* HBK. Nov. Gen. & Sp. 6: 97. 1823. *Berro de clavo* (fide Aguilar).**

Floating on quiet streams or pools, or more often rooting in mud or very wet soil, 1,800 meters or less, most common at low elevations; Alta Verapaz; El Progreso; Izabal; Zacapa; Chiquimula; Jalapa; Jutiapa; Santa Rosa; Escuintla; Guatemala; Sacatepéquez; Chimaltenango; Sololá; Huehuetenango; Quezaltenango; San Marcos; probably in all the lowland departments. Western United States; Mexico; Honduras and El Salvador to Costa Rica; West Indies; South America; Old World tropics.

Plants perennial, slightly succulent, the stems creeping or floating, short or often much elongate, glabrous or nearly so or sometimes pubescent; roots generally slender, sometimes spongy; leaves bright green, thin, slender-petiolate, mostly oblong to spatulate-oblong, obtuse or acute, acute at the base, narrowed at the base into a flattened or narrowly winged petiole, entire, usually glabrous; pedicels slender, 1–6 cm. long, often reflexed in fruit; bractlets deltoid, scale-like, 0.5–1 mm. long; hypanthium subcylindric, usually glabrous, 7–14 mm. long; sepals 5, linear-lanceolate, 4–12 mm. long, acute; petals yellow, obovate, emarginate, 7–24 mm. long; disk pilose; anthers 1 mm. long; style 3–5 mm. long; capsule cylindric, often nodulose, 1–4 cm. long, 2–3.5 mm. thick; seeds uniseriate in each cell, included in the endocarp, obliquely truncate at each end, 1–1.5 mm. long.

The typical variety of the species, confined to the Old World tropics, has white petals.

***Jussiaea sedioides* Humb. & Bonpl. Pl. Aequin. 1: 13, *t. 3, f. A.* 1808. *Canario de agua* (fide Aguilar).**

Floating in lake; Santa Rosa (Lago de los Pinos). Honduras; El Salvador; Panama; West Indies. Widely distributed in South America.

Plants very slender, floating usually in deep water, the stems often much elongated, emitting numerous roots at the nodes; leaves crowded in dense rosettes at the ends of the branches and floating, the petioles very slender, 1–9 cm. long; leaf blades rather thick, rhombic-ovate, 5–20 mm. long and broad, obtuse, acute at the base, conspicuously crenate-serrate in the upper half, glabrous and bright green above, finely strigose beneath; flowers solitary in the leaf axils, the slender pedicels 1–3 cm. long, often reddish; bractlets tumid, less than 1 mm. long; hypanthium obconic, 4-angulate, glabrous, 8–10 mm. long; sepals usually 4, oblong-ovate, subobtuse or acute, 6–8 mm. long; petals yellow, rounded-obovate, emarginate, almost sessile, 10–13 mm. long; disk pilose; anthers 2 mm. long; style 3.5 mm. long; capsule narrowly obconic, 4-angulate, 10–13 mm. long, 3 mm. broad; seeds brown, lustrous, narrowly obovoid, curved at the apex, 0.6 mm. long, with an inconspicuous raphe.

This is a rare plant in Central America, known from a single locality in each of the countries where it has been found.

Jussiaea suffruticosa L. Sp. Pl. 388. 1753.

Plants erect, herbaceous or rarely suffrutescent below, mostly a meter high or less but sometimes 2 meters tall, usually much branched, almost glabrous to densely pilose; leaves membranaceous or rigid-membranaceous, sessile or short-petiolate, oblong to lance-ovate or almost linear, subacute to acuminate, acute at the base, entire, 3–11 cm. long, 0.2–2.5 cm. broad, or sometimes larger; flowers solitary in the upper leaf axils, the pedicels 1–20 mm. long at anthesis; bractlets inserted on the upper part of the pedicel or at the base of the hypanthium, usually setaceous; hypanthium clavate-cylindric, somewhat tetragonous, usually 10–15 mm. long; sepals 4, narrowly or broadly ovate, obtuse to abruptly acuminate, 8–14 mm. long; petals yellow, cuneate-obovate, scarcely unguiculate, 1–2 cm. long; disk pilose; anthers 2–3 mm. long; style stout, 1.5–3 mm. long; capsule cylindric to clavate, subterete or obtusely tetragonous, 2.5–5 cm. long, 2.5–3.5 mm. broad; seeds rounded, brown, lustrous, 0.6 mm. long, the raphe as wide as the body.

One of the commonest weedy plants of all Central America, abundant almost everywhere in the lowlands and even at middle elevations. Munz places the typical variety of the species as being Indian and recognizes four varieties and one form of it in America, among which there is almost complete intergradation. The varieties and form distinguished by Munz for Central America follow:

Leaves almost linear, at least 10 times as long as wide

J. suffruticosa var. *ligustrifolia* f. *linearifolia*.

Leaves mostly lanceolate or ovate, not more than 6 times as long as wide.

Stems and leaves pubescent with more or less spreading hairs.

J. suffruticosa var. *octofila*.

Stems and leaves glabrous to strigillose. *J. suffruticosa* var. *ligustrifolia*.

Jussiaea suffruticosa var. *ligustrifolia* (HBK.) Griseb. Mem. Amer. Acad. n. ser. 8: 187. 1860. *J. ligustrifolia* HBK. Nov. Gen.

& Sp. 6: 100. 1823. *J. octonervia* Lam. Encycl. 3: 332, t. 280, f. 1. 1789.

Wet fields, meadows, or savannas, sometimes in open pine forest or in marshes, 1,300 meters or less; Petén; Alta Verapaz; Izabal; Zacapa; Jalapa. Mexico; British Honduras to El Salvador and Panama; West Indies; South America; Old World tropics.

Stems often slender and rather wiry, glabrous to strigillose, especially on the younger parts; leaves narrowly lanceolate to ovate, usually acute or acuminate, 3–12 cm. long, glabrous or sparsely strigillose; fruiting pedicels mostly 5–10 mm. long; bractlets inserted on the base of the hypanthium, setaceous, 1–3 mm. long; sepals ovate, acuminate, 8–12 mm. long.

The variety is not sharply distinguished from var. *octofila*, and for all practical purposes it is sufficient to call all material of this species simply *Jussiaea suffruticosa*.

Jussiaea suffruticosa* var. *ligustrifolia* f. *linearifolia (Hassler) Munz, Darwiniana 4: 243. 1942. *J. suffruticosa* var. *linearifolia* Hassler, Repert. Sp. Nov. 12: 277. 1913.

Moist or wet fields, plains, or savannas, sometimes in lowland or mountain pine forest, 1,400 meters or less; Izabal; Zacapa; Jalapa; Jutiapa. Southern Florida; Mexico; British Honduras to El Salvador and Panama; West Indies; South America.

Similar to var. *ligustrifolia*, the plants glabrous or puberulent; leaves linear or lance-linear, acuminate, glabrous or nearly so, only 2–5 mm. broad.

Jussiaea suffruticosa* var. *octofila (DC.) Munz, Darwiniana 4: 239. 1942. *J. octofila* DC. Prodr. 3: 57. 1828. *Hierba del clavo; chile de rata*.

Marshes, moist or wet fields, ditches, wooded swamps, thickets, sand bars along streams, or in moist or wet places generally, often in cultivated fields, 2,000 meters or less, most common at low elevations; Petén; Alta Verapaz; El Progreso; Izabal; Zacapa; Chiquimula; Jutiapa; Santa Rosa; Escuintla; Guatemala; Chimaltenango; Huehuetenango; Sololá; Suchitepéquez; Retalhuleu; Quezaltenango; San Marcos; probably in all the departments. Southern United States; Mexico; British Honduras to El Salvador and Panama; West Indies; South America.

A stout or slender, erect herb, commonly a meter high and often 2 meters, the stems and leaves pubescent with sparse or often dense, mostly spreading hairs; leaves lanceolate to lance-ovate, 2–10 cm. long and 8–25 mm. broad or even larger; fruiting pedicels mostly 4–12 mm. long; bractlets setaceous, 1–3 mm. long; sepals ovate or lance-ovate, 7–8 mm. long, pubescent.

The Maya name of Yucatan is recorded as "*mazcabche*"; "*cornezuelo cimarrón*" (Yucatan); "*flor de camarón*" (Tabasco); "*hierba de Santa Cruz*," "*sulfatillo*," "*sanangujo*" (El Salvador); "*clavel*" (Vera-cruz). When growing in thickets the stems sometimes become much elongate, several meters long, and are clambering or subscandent over shrubs.

Jussiaea uruguayensis Cambessedes in St. Hil. Fl. Bras. Merid. 2: 264. 1829.

In marshes or about the borders of lakes, 600–1,200 meters; Jutiapa (Lago Retana); Guatemala (Amatitlán). Southeastern United States; Costa Rica. Widely distributed in South America.

Plants perennial, herbaceous, from creeping rhizomes, floating or creeping and with stout erect terminal branches, glabrous throughout or sparsely pubescent; leaves on slender petioles 1–2 cm. long, linear-lanceolate to oblanceolate or oblong, rather thick, glabrous, 3–10 cm. long, 3–10 mm. broad, acute or obtuse, entire, the leaves of floating and repent stems usually smaller, the stems sometimes bearing pneumatophores; flowers solitary in the leaf axils, on pedicels 1–2 cm. long, spreading or reflexed in fruit; bractlets inserted at the base of the hypanthium, lanceolate, 1 mm. long or shorter; hypanthium sublinear, 7–10 mm. long, pilose or glabrous; sepals 5–6, lanceolate, acute, pilose or glabrous, 6–13 mm. long; petals yellow, oblong-ovate, 12–20 mm. long, emarginate, short-unguiculate; disk pilose; anthers 2–3 mm. long; style slender, 4–5 mm. long; capsule subcylindric, 10-nerved, usually pilose, somewhat nodulose, 1.5–2.5 cm. long, 3–4 mm. thick; seeds pendulous, enclosed in the hard endocarp and thus appearing truncate at the ends, triangular in cross section, 1.5 mm. long.

LOPEZIA Cavanilles

Reference: Philip A. Munz, The *Lopezieae* (Onagraceae), *Brittonia* 13: 73–90. 1961.

Slender erect annuals, glabrous or usually abundantly pubescent; leaves alternate or the lower ones opposite, petiolate, membranaceous, dentate; flowers small, racemose or subcorymbose at the ends of the branches, usually on long slender pedicels; hypanthium subglobose at the base, little produced beyond the ovary; sepals 4, colored, unequal, deciduous, linear; petals 4, on short or long claws, unequal, the posterior ones narrower, the claws glandular at the apex; stamens 2, epigynous, one of them petaloid, without an anther, the filaments short, subulate, dilated at the base; fertile anther linear-oblong; ovary 4-celled, the style short, filiform, the stigma truncate; ovules numerous in each cell, multiserial; fruit capsular, globose, coriaceous, 4-celled, loculicidally 4-valvate at the apex or more deeply, the valves separating from the seminiferous column; seeds numerous, obovoid, the testa coriaceous, granulose.

Munz recognizes 17 species in the genus, with most of them to be found in Mexico. One other species is found in Central America and Panama.

Sepals 15–20 mm. long; capsule 6–9 mm. long.....*L. grandiflora*.

Sepals 8 mm. long or less; capsule 3–5 mm. long.

Capsules 4–5 mm. in diameter; plants tending to be annuals and the stems angled.

Lower flowers borne in the axils of bracts; racemes in open panicles.

L. racemosa.

Lower flowers borne in the axils of foliage leaves; racemes simple.

L. coronata.

Capsules about 3 mm. in diameter; plants mostly perennial and the stems terete.

L. hirsuta.

***Lopezia coronata* Andrews, Bot. Rep. t. 551. 1808.**

Not presently known from Guatemala but to be expected there as it is found near by in both Mexico and El Salvador.

Annuals or perhaps somewhat suffrutescent perennials to a meter or more tall, the branchlets pubescent to almost glabrous; leaves opposite or alternate, lanceolate to ovate, serrulate, petioles 2–10 mm. long, the blades 2–4.5 cm. long; inflorescence a simple unbranched raceme, leafy; pedicels capillary, solitary, 1–2 cm. long; sepals lanceolate, the uppermost ascending, the lower ones spreading, about 6 mm. long; upper two petals narrowly oblong, 3–4 mm. long, the lower two broadly obovate and projecting laterally; anther of fertile stamen about 2 mm. long; capsule globose, 4–5 mm. in diameter.

***Lopezia grandiflora* Zucc. Flora 15, Beibl. 2: 101. 1832. *L. macrophylla* Benth, Pl. Hartw. 83. 1841 (type from near Dueñas, Hartweg 477). *Jehlia macrophylla* Rose, Contr. U. S. Nat. Herb. 12: 297. 1909. *Jehlia grandiflora* Rose, l.c. *Lila* (Chiquimula).**

Moist or wet dense forest, 1,500–2,000 meters; Chiquimula; Sacatepéquez; Santa Rosa; San Marcos. Mexico (Chiapas).

Plants perennial, suffrutescent or woody, 1.5 meters high or less, the stems green, glabrous; leaves membranaceous, slender-petiolate, elliptic to oblong or oblanceolate, commonly 8–16 cm. long and 2.5–6 cm. broad, acuminate, attenuate to the base, denticulate, sparsely setulose-pilose, especially along the nerves, or almost wholly glabrous; flowers large and showy, scarlet or dark red, in short dense leafy-bracted racemes, these solitary or several at the ends of the main branches; bracts equaling or shorter than the long slender pedicels; sepals about 15 mm. long, glabrous; petals about equaling the sepals, one of them twice as broad as the others, oval-oblong, the others narrowly oblong, short-unguiculate; sterile stamen oblong-linear, petaloid; anther oblong-linear; capsule globose or oval, 1 cm. long; glabrous; seeds muricate-rugulose.

This is the basis of Rose's genus *Jehlia* and is, in general appearance, unlike other species of *Lopezia*. Dr. Munz has placed it in *Lopezia* but Dr. Miranda, astute student of the Mexican flora, has stated that he believes the species to represent a distinct and monotypic genus (Brittonia 14: 46. 1962).

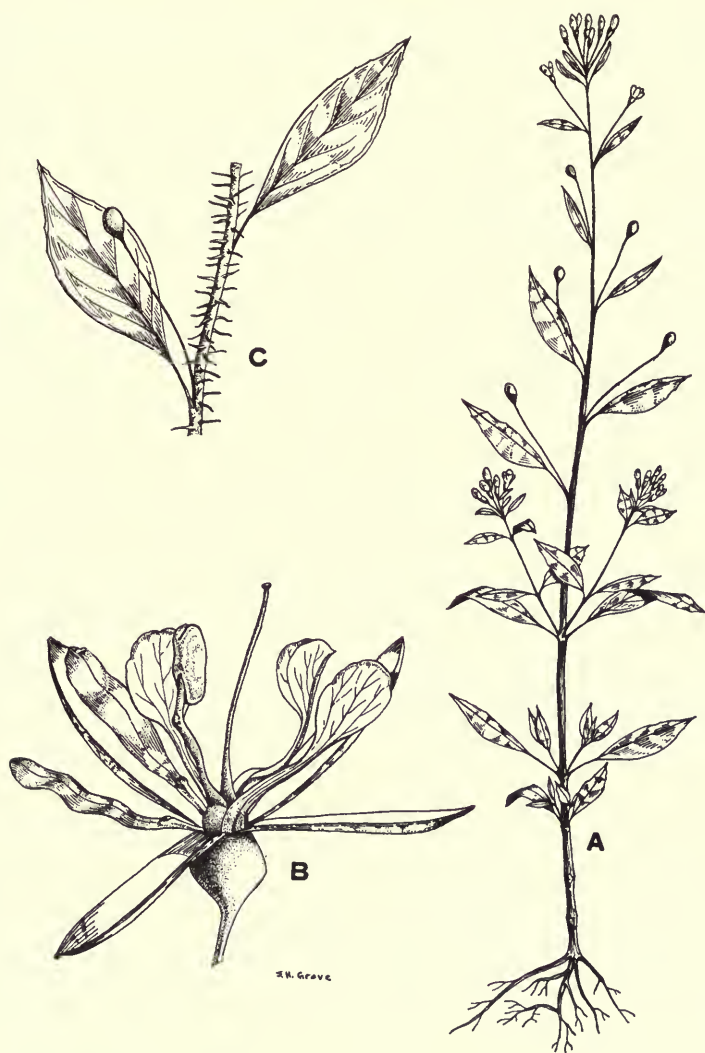


FIG. 90. *Lopezia hirsuta*. A, Habit; $\times \frac{1}{2}$. B, Flower, enlarged; $\times 7\frac{1}{2}$. C, Section of stem from pubescent phase of species.

Lopezia hirsuta Jacq. Obs. Bot. 5: t. 15, f. 4. 1796. *L. corymbosa* Sprague & Riley, Jour. Bot. 62: 15. 1924 (type from Cobán, Tuerckheim 766). *Pienetilla*.

Moist or wet meadows or thickets, sometimes in thin forest or a weed in corn fields or coffee plantations, 1,200–3,200 meters; Alta Verapaz; Baja Verapaz; Chimaltenango; Sacatepéquez; Guatemala;

Jalapa; Zacapa; Jutiapa; Escuintla; Huehuetenango; San Marcos; Quezaltenango. Mexico; El Salvador.

Plants erect annuals or woody perennials usually a meter high or less, generally much branched, the branches green or brownish, generally densely hirsute with whitish, thick, mostly spreading hairs and also more or less puberulent; leaves on long slender petioles, chiefly ovate to elliptic or oblong-ovate, 1.5–5.5 cm. long, acute or acuminate, rounded or very obtuse at the base, denticulate, somewhat paler beneath, sparsely or copiously pilose or hirsute on both surfaces with long or short, spreading or subappressed hairs; flowers salmon-pink, forming long slender leafy-bracted racemes, the bracts leaf-like, mostly shorter than the pedicels; pedicels very slender, 1–2 cm. long, spreading or ascending, puberulent or glabrous; buds dark red, about 5 mm. long, usually quite glabrous, rounded at the apex; petals unguiculate, 8 mm. long or shorter, the posterior ones 1-tuberculate on the claw; anther little more than 1 mm. long; capsule globose, glabrous, 3 mm. in diameter.

Called "*moscas*" in Veracruz, in allusion to the form of the flowers, which suggest large and delicate, colored gnats hovering over the plant. The species of this genus have long been in cultivation in Europe and the United States as pot plants in houses or in greenhouses. They are not very decorative and consequently never have become common, although they are easy of growth. In the mountains of Guatemala they often occur in great abundance on the borders of the forest and at times provide a fair display of color, but they are decidedly weedy in nature, remain in flower for a rather brief period, and in age are unsightly.

Lopezia racemosa Cav. Ic. 1: 12, t. 18. 1791. *L. mexicana* Jacq. Ic. Pl. Rar. 2: 12, t. 203. 1793–94. *Marimbita*.

Moist or wet thickets or rather thin forest, sandy fields, sand bars along streams, frequently in oak or pine forest or in coffee plantations, 800–3,000 meters, nearly always above 1,500 meters; Chimaltenango; Sacatepéquez; San Marcos; Quezaltenango. Mexico.

An erect annual, usually a meter high or often much lower, generally much branched, the branches brownish in age, puberulent, short-pilose or almost glabrous, terete; leaves slender-petiolate, broadly ovate to lance-ovate, mostly 1–4 cm. long, acute or acuminate, rounded or obtuse at the base, denticulate, setulose-pilose, especially beneath, with short, mostly subappressed hairs or almost wholly glabrous; flowers salmon-red, very numerous, on slender, spreading or ascending, almost filiform pedicels in long slender leafy-bracted racemes, these glabrous or sparsely puberulent; flower buds deep red, rounded at the apex, glabrous, to about 5 mm. long; larger petals slender-unguiculate, the blades almost as broad as long; claw of the posterior petals 1-tuberculate; anther about 1.3 mm. long; capsule globose, glabrous, 3–4 mm. in diameter.

This species has been most often determined as *L. mexicana* due to confusion concerning date of publication of the book in which it appeared.

LUDWIGIA L.

Reference: Philip A. Munz, Studies in Onagraceae—XIII: The American species of *Ludwigia*, Bull. Torr. Bot. Club 71: 152–165. 1944.

Annual or perennial herbs, glabrous or pubescent; leaves opposite or alternate, membranaceous, entire; flowers mostly axillary, solitary, and sessile, rarely pedunculate or in terminal heads, the peduncles usually 2-bracteate; hypanthium cylindric, prismatic, or turbinate, not produced above the ovary; sepals 3–5, acute, persistent or tardily deciduous; petals 3–5 or none, inserted below the edge of the conic or depressed, sulcate or lobate epigynous disk, lanceolate or obovate, spreading; stamens 3–5, inserted with the petals, the filaments short, the anthers ovoid or oblong; ovary 4–5-celled, the style usually short, the stigma capitate, 3–5-lobate, or 3–5-sulcate; ovules pluriseriate along the interior angle of the cell; fruit capsular, crowned by the epigynous disk and sepals, coriaceous or chartaceous, terete or with 4–5 costae, angles, or wings, dehiscent septicidally or by apical pores or the cells irregularly rupturing; seeds very numerous, minute, the testa membranaceous or chartaceous.

About 30 species, mostly in temperate regions of North America, a few in the Old World; in the tropics found in mountain regions. One other Central American species has been found in Honduras and Panama.

***Ludwigia palustris* (L.) Ell. Bot. S. Carol. & Ga. 1: 211. 1817.**
Isnardia palustris L. Sp. Pl. 120. 1753.

The typical form of the species, *L. palustris* var. *palustris*, is native in Europe, Asia, and Africa. Two varieties occur in Guatemala:

Leaf blades at least one-half as wide as long; mature hypanthium 2–3.5 mm. in diameter at the middle. *L. palustris* var. *americana*.
Leaf blades one-fourth to one-third as wide as long; mature hypanthium 1.4–2 mm. in diameter at the middle. *L. palustris* var. *nana*.

***Ludwigia palustris* var. *americana* (DC.) Fernald & Griscom, Rhodora 37: 176. 1935.** *Isnardia palustris* var. *americana* DC. Prodr. 3: 61. 1828.

In running water, 500–1,800 meters; Alta Verapaz; Baja Verapaz; Jutiapa; Huehuetenango (near Huehuetenango). Southern Canada; United States; Mexico; Costa Rica.

Plants aquatic, floating, sometimes rooting on mud, glabrous, rooting at the nodes, somewhat succulent, the stems branched, mostly 30 cm. long or shorter;

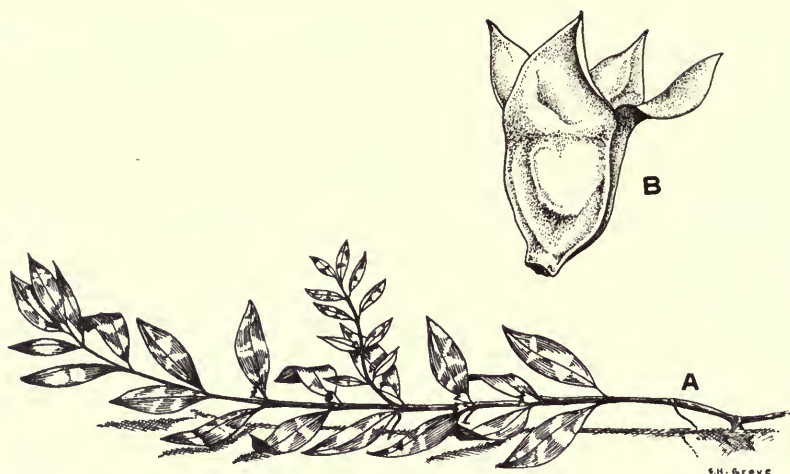


FIG. 91. *Ludwigia palustris* var. *nana*. A, Plant; natural size. B, Calyx; $\times 10$.

leaves opposite, oval to ovate or spatulate, 1–2.5 cm. long, acute or obtuse, narrowed at the base into a short slender petiole; flowers solitary, sessile, about 2 mm. broad, greenish; bractlets usually none at the base of the hypanthium; sepals broadly deltoid, acute; petals very small, dull reddish or wanting; capsule slightly longer than broad, about 3 mm. long, slightly longer than the persistent sepals.

Ludwigia palustris* var. *nana Fernald & Griscom, *Rhodora* 37: 176. 1935.

Wet meadows or fields, 1,500–1,900 meters; Alta Verapaz; Jalapa; Huehuetenango. Southern United States; southern Mexico; Greater Antilles; Colombia.

Similar to the preceding variety, but distinguished by its narrower and usually smaller leaves, 2.5 cm. long or shorter, long-petiolate, acute or acuminate; capsule 2.2–3 mm. long; sepals narrowly deltoid or broadly lanceolate, acuminate.

OENOTHERA L. Evening primrose

References: Philip A. Munz, *Studies in Onagraceae—VIII: The subgenera Hartmannia and Gauropsis of the genus Oenothera*. The genus *Gayophytum*, *Am. Jour. Bot.* 19: 755–778. 1932. *Studies in Onagraceae—IX: The subgenus Raimannia*, *op. cit.* 22: 645–663. 1935. The *Oenothera Hookeri* group, *Aliso*, 2: 1–47, illus. 1949.

Annual or perennial herbs, pubescent or glabrous, usually erect or ascending, branched or simple; leaves alternate, sessile or petiolate, often forming basal rosettes, entire, dentate, lobate, or pinnatifid; flowers small or large, axillary, solitary, sessile or pedicellate, yellow, pink, or white; hypanthium linear or clavate, 4-angu-

late, produced above the ovary into a short or elongate, cylindric tube, this more or less dilated above; sepals 4, deciduous; petals 4, obovate or obcordate, scarcely unguiculate; stamens 8, equal or alternately unequal, the filaments filiform; anthers linear, not revolute, generally elongate; ovary 4-celled, the style filiform, the stigma capitate and entire or 4-lobate, or 4-parted with elongate lobes; ovules numerous, 1-2-seriate along the interior angle of the cell, horizontal or ascending; fruit capsular, various in form, usually coriaceous or lignescent, linear to oblong or clavate, terete, 4-angulate, or multi-angulate, sometimes broadly 4-winged, 4-celled or rarely 1-celled, 4-valvate to the middle or rarely for its whole length; seeds numerous or few, naked or appendaged.

Species 100 or fewer, nearly all American, chiefly in temperate or warm-temperate regions and mostly in the United States. Only the following have been found in Central America.

Capsule elongate-cylindric, sessile; petals bright yellow, turning red in age; tube of the hypanthium 1.5-5 cm. long.

Leaves, at least the cauline ones, merely denticulate; capsule 5-6 mm. thick.

O. elata.

Leaves all or mostly sinuate-lobate or coarsely dentate; capsule 2-3 mm. thick.

O. laciniata.

Capsule clavate, narrowed below into a long stipe; petals usually white or pink, sometimes partly yellow but then principally dark red; tube of the hypanthium 1 cm. long or shorter.

Petals dark red and yellow; leaves denticulate or subentire. . . . *O. multicaulis*.

Petals white or pink; leaves, at least part of them, pinnatifid or sinuate, or the uppermost merely denticulate.

Petals 5-10 mm. long; pubescence of the flowers all closely appressed.

O. rosea.

Petals 20-35 mm. long; pubescence of the flowers partly of long spreading hairs. . . . *O. tetraptera*.

Oenothera elata HBK. Nov. Gen. & Sp. 6: 90. 1823; Munz, Aliso 2: 35, t. 5. 1949. *O. Simsiana* Seringe in DC. Prodr. 3: 47. 1828.

At 2,000 meters or more; cultivated commonly for ornament in Guatemalan gardens and parks, principally at middle or rather high elevations; Sololá. Mountains of Mexico; El Salvador.

A tall erect herb, about a meter high or lower, densely and rather softly pubescent, simple or sparsely branched, the stems stout, densely leafy; cauline leaves sessile or short-petiolate, gradually smaller upward, narrowly lanceolate, mostly 5-8 cm. long, attenuate-acuminate, inconspicuously denticulate or almost entire; flowers numerous, forming short or elongate, leafy-bracted spikes; tube of the hypanthium very slender, about 3.5 cm. long, densely pilose with ascending hairs; sepals linear or lance-linear, 4 cm. long, with short free tips; petals yellow, 4 cm. long; anthers linear, about 8 mm. long; capsule cylindric, sessile, about 3.5 cm. long and 6 mm. thick, costate, pilose.



FIG. 92. *Oenothera laciniata* var. *pubescens*. A, Habit; $\times \frac{1}{2}$. B, Flower; $\times \pm 8$.

Perhaps this is the plant reported from Río Guacalate (probably Sacatepéquez) by Hemsley as *O. biennis* L., a related species of the United States. The plant is cultivated frequently for its large and handsome flowers.

Oenothera laciniata Hill, Hort. Kew. 172, t. 6. 1769. *Raimania lacinata* Rose, Contr. U. S. Nat. Herb. 8: 331. 1905. *O. sinuata* L. Mant. Pl. 2: 228. 1771. *O. mexicana* Spach, Nouv. Ann. Mus. Paris 4: 347. 1835. *O. pubescens* Willd. ex Spreng. Syst. 2: 229. 1825. *O. laciniata* var. *pubescens* Munz, Am. Jour. Bot. 22: 656. 1935.

Moist or dry fields or hillsides, often in open rocky places, frequently in pine or oak forest, a common weed in gardens or corn

fields, sometimes on sand bars along streams, 1,350–2,700 meters; Escuintla; Guatemala; Sacatepéquez; Chimaltenango; Huehuetenango; Quezaltenango; San Marcos. United States; Mexico; Costa Rica; northwestern South America.

Plants usually annual, perhaps sometimes perennial, erect or ascending, simple or usually branched, often with numerous stems from the base, commonly 35 cm. high or less, finely whitish-strigose on the stems, leaves, and flowers, the stems stout; leaves glabrate or usually rather densely whitish-strigose, oblanceolate to oblong-lanceolate, usually sinuate-pinnatifid or sinuate-dentate, sometimes entire, 2–10 cm. long, the lower ones petiolate, the upper sessile or nearly so, not reduced to bracts; flowers solitary in the upper leaf axils, the buds erect or nutant; hypanthium 1.5–5 cm. long; sepals lance-linear, 5–30 mm. long, with short free tips; petals yellow, turning red in drying, 5–35 mm. long, broadly obovate or obcordate; stigma lobes linear, 2–6 mm. long; capsule cylindric, usually somewhat arcuate, divaricate, 1–3.5 cm. long, 2–3 mm. thick, sessile; seeds 1 mm. long, brownish, evenly pitted.

The Central American material is referable to *O. laciniata* var. *pubescens* (Willd.) Munz. The typical variety of the species is native in the United States. The plant has been reported from Guatemala as *O. Walpersii* Donn.-Sm., with *O. micrantha* Walp., not Hornem., cited as a synonym. It is often extremely abundant at and after the end of the rainy season in corn fields in the central and western departments. The flowers, as in most other species, open late in the evening and close during the following forenoon. This is presumably the species recorded from Guatemala by Loesener as *Anogra pinnatifida* (Nutt.) Spach.

Oenothera multicaulis Ruiz & Pavón, Fl. Peruv. 3: 80, t. 317. 1802. *O. tarquensis* HBK. Nov. Gen. & Sp. 6: 91. 1823. *O. cuprea* Schlecht. Linnaea 12: 269. 1838. *Xylopleurum multicaule* Loes. Repert. Sp. Nov. 12: 237. 1913. *O. multicaulis* var. *tarquensis* Munz & Johnston, Contr. Gray Herb. 75: 18. 1925. *Bolsa amarilla* (fide Aguilar).

Moist meadows or thickets or in rather dry, exposed, rocky places, 2,300–4,000 meters; Alta Verapaz; Sacatepéquez (Volcán de Agua); Chimaltenango; Sololá; Huehuetenango; Totonicapán; Quezaltenango. Mountains of southern Mexico; Costa Rica; northwestern South America.

Plants perennial from a thick and more or less woody, often matted root, usually with numerous stems from the base, these prostrate or procumbent, 10–25 cm. long, leafy, rather stout, villous to glabrate, simple or sparsely branched; leaves of the basal rosette broadly oblanceolate, 1–5 cm. long, obtuse, pubescent on the margins and on the veins beneath, gradually narrowed into a winged petiole

about as long as the blade; cauline leaves oblong-ovate to lance-ovate, sessile, 1–3 cm. long, obtuse, pubescent on the veins and margins; flowers solitary, axillary, sessile, diurnal; hypanthium tube 4–8 mm. long, pubescent, often purplish; sepals lanceolate, 3–6 mm. long, pubescent, without free tips in bud; petals yellow and dark red, becoming orange-red in age, broadly obovate, 3–6 mm. long, erect and connivent in anthesis; stigma lobes ovoid, 1 mm. long; capsule clavate, villous to glabrate, 1–2 cm. long, arcuate, 3–4 mm. thick in the upper part, somewhat 4-angulate or narrowly winged; seeds numerous, brown, obovoid, 0.5–1.5 mm. long.

The Central American material is referable to var. *tarquensis* (HBK.) Munz & Johnston, the typical variety of the species (var. *multicaulis*) occurring in Peru and Bolivia. This plant is found in Guatemala chiefly in alpine or subalpine meadows, where it is inconspicuous but attracts attention from the somewhat unusual color of its dark red or orange-red petals.

Oenothera rosea Ait. Hort. Kew. ed. 1, 2: 3. 1789. *Hartmannia rosea* G. Don in Sweet, Hort. Brit. ed. 3: 236. 1839. *Bolsa de pastor* (fide Aguilar).

Moist or wet thickets, open banks, meadows, or fields, sometimes in rather dry, rocky places, often on sand bars along streams, or a weed in cultivated ground, 400–2,300 meters, mostly at middle elevations; Alta Verapaz; Baja Verapaz; El Progreso; Jalapa; Santa Rosa; Guatemala; Sacatepéquez; Chimaltenango; Sololá; Quiché; Huehuetenango; Quezaltenango. Western Texas; Mexico; Costa Rica; western South America.

Plants annual or perennial, 15–50 cm. high, the stems solitary or several, slender and rather wiry, simple or branched, grayish-strigillose throughout; basal leaves oblanceolate to narrowly obovate, usually coarsely sinuate-dentate or pinnatifid, 2–5 cm. long, obtuse, narrowed into a slender petiole 1–2 cm. long; cauline leaves gradually reduced upward, mostly oblong-ovate, subentire to sinuate-denticulate or often pinnatifid at the base, 1.5–3 cm. long, obtuse or acute, the uppermost leaves reduced to lance-linear bracts; flowers axillary, forming slender racemes; tube of the hypanthium 4–8 mm. long, slender, grayish-strigillose; sepals 5–8 mm. long, with short free tips; petals pink, turning purplish or violet in fading, broadly obovate, 5–10 mm. long; stamens subequal, almost equaling the petals; anthers 2.5–4 mm. long; stigma lobes linear, 2 mm. long; capsule obovoid, 8–10 mm. long, 3–4 mm. thick, strigillose, the 4 angles somewhat winged, the base of the capsule narrowed into a hollow pedicel 5–20 mm. long; seeds oblong-obovoid, brown, 0.6 mm. long.

A rather weedy plant with small inconspicuous flowers.

Oenothera tetraptera Cav. Icon. 3: 40, t. 279. 1794. *Xylopleurum tetrapterum* Raim. in Engler & Prantl, Pflanzenfam. 3, Abt. 7: 214. 1893. *Hartmannia tetraptera* Small, Bull. Torr. Bot.

Club 23: 181. 1896. *Bolsa de pastor* (fide Aguilar); *tchac-tzulucán* (Huehuetenango).

Moist to dry fields, hillsides, often a weed in waste or cultivated ground, 1,300–2,400 meters; Alta Verapaz; El Progreso; Jalapa; Guatemala; Quiché; Huehuetenango. Mexico; Costa Rica; Colombia; Venezuela.

Plants annual or perennial, herbaceous, erect or decumbent, the stems few or solitary, sparsely branched, 50 cm. high or lower, strigillose and pilose with spreading hairs; basal leaves oblanceolate or broader, 3–10 cm. long, 1–3 cm. broad, sinuate-pinnatifid, with several ovate-oblong lateral lobes and a large terminal lobe, sometimes entire, petiolate, villous or glabrate; cauline leaves smaller, 2–5 cm. long, mostly lance-ovate and sinuate-pinnatifid, sometimes dentate or even subentire, the uppermost leaves more reduced; hypanthium about 1 cm. long, hirsute and strigose; sepals 2–3.5 cm. long, with very short, free tips in bud; petals white, turning pink, 2–3.5 cm. long, broadly obovate; stamens subequal; capsule obovoid, 1–1.5 cm. long, 6–8 mm. thick, hirsute and strigose, narrowly winged on the angles, narrowed into a hollow pedicel 5–25 mm. long; seeds light brown, obovoid, 1.3 mm. long.

A rather showy plant when in full flower. It and some of its close relatives are sometimes planted for ornament.

OOCARPON Micheli

Tall slender glabrous herbs or suffrutescent plants, branched, the lower part of the stem usually much thickened and spongy; leaves alternate, linear or linear-lanceolate, entire, membranaceous or chartaceous, short-petiolate; flowers small, yellow, usually 5-parted, solitary and pedicellate in the leaf axils; pedicels bearing at the apex 2 small bractlets; hypanthium obconic; sepals lance-subulate, herbaceous or rigid, persistent and erect in fruit; petals shorter than the sepals; stamens 5, alternate with the petals; fruit capsular, oblong or oval, conspicuously torulose, the epicarp thin, the endocarp thick, lignescent, not opening; seeds few, usually 8–10 or fewer, large, 1-seriate, pendulous.

The genus consists of a single species.

Oocarpum torulosum (Arnott) Urban, Ark. Bot. 23A, no. 11: 28. 1931. *Jussiaea torulosa* Arnott, Ann. Sci. Nat. ser. 2, 3: 251. 1835. *O. jussiaeioides* Micheli, Fl. Ratisb. 57. 1874.

In open swamps at sea level; British Honduras (All Pines, W. A. Schipp S-185). Panama; Cuba; South America.

Plants usually 1–1.5 meters high, glabrous or practically so, very leafy, usually much branched, the branches slender, ferruginous or dark reddish; leaves mostly 4–12 cm. long and 3–12 mm. broad, long-attenuate, acute at the base, short-petiolate, the lateral nerves very numerous but inconspicuous, arcuate, the costa slender, prominent beneath; hypanthium 2.5 mm. long at anthesis, acute at the



FIG. 93. *Oocarpon torulosum*. A, Habit of plant, showing one mature fruit; $\times \frac{1}{2}$. B, Flower; $\times \pm 8$.

base; sepals about 3 mm. long, attenuate; petals small and inconspicuous, cream-colored or yellow at the base; style rather stout, 2.5 mm. long; fruit 5-6 mm. long, 2.5-3 mm. thick, strongly constricted about the seeds, borne on a pedicel 3-4 mm. long.

HALORAGACEAE

Reference: Anton K. Schindler, Halorrhagaceae, Pflanzenreich IV, 225: 1-133. 1905.

Mostly perennial herbs, aquatic or terrestrial; leaves opposite, alternate, or verticillate, the submersed ones often pinnate; stipules none, but large ligules sometimes present on the stems; flowers perfect or unisexual, mostly minute; calyx tube adnate to the ovary, the segments generally 4 or 2, sometimes 3 or none; petals 4, 2, or none, the filaments usually long and slender, the anthers basifixed, laterally dehiscent, broadly linear, rarely elliptic; ovary hypogynous, ovoid or oblong, cylindric or 4-5-angulate, 4-8-costate, or winged or sulcate, 1-4-celled; styles 4-1, discrete, short or elongate, the stigmas papillose or plumose; ovules as many as the styles, pendulous from the apex of the cell, anatropous; fruit small, nut-like or drupaceous, angulate, sulcate, or winged, indehiscent, 4-1-celled, 4-1-

seeded, or of 4 or 2 cocci; testa of the seed membranaceous, the endosperm carnose, usually abundant, the embryo cylindric, the cotyledons short, the radicle terete, superior, elongate.

Seven genera, in tropical and temperate regions of both hemispheres. Only the following are represented in Central America.

Ovary 1-celled; plants terrestrial, acaulescent, the leaves very large, cordate at the base, palmate-nerved *Gunnera*.

Ovary 4-2-celled; plants aquatic, with elongate stems; leaves various, but not cordate at the base.

Leaves all except the uppermost divided into capillary segments. *Myriophyllum*.

Leaves mostly lanceolate and serrate. *Proserpinaca*.

GUNNERA L.

Acaulescent herbs, perennial, often very large, pubescent or glabrous, with an often very thick, repent or suberect rhizome; leaves petiolate, sometimes very large, mostly rounded-cordate, variously lobate or simple, crenate or serrate; flowers perfect or unisexual, monoecious or dioecious, very small, usually dark red, spicate, racemose, or paniculate upon a long scape, generally ebracteolate; calyx tube of the perfect flowers ovoid or compressed, the 2 lobes thick, laciniate; petals 2 or none, oblong, concave, laciniate; stamens 2, inserted upon the petals, the filaments short and thick, the anthers elliptic, longer than the filaments; styles 2, elongate, subulate or compressed, papillose; calyx tube of the staminate flowers reduced, the lobes usually long, the filaments very long and slender; petals of the pistillate flowers abortive, the ovary 1-celled, 1-ovulate; fruit very small, drupaceous or nut-like.

Species 30 or more, chiefly in the southern hemisphere. Three species, two probably synonymous, have been described from Costa Rica, and *G. insignis* (Oerst.) A. DC. extends into the mountains of Panama. Two species are described from Mexico and northern Central America, of which the following is in Guatemala.

Gunnera Killipiana Lundell, *Phytologia* 1: 452. 1940. *Capote; sechó* (Indians of San Martín Chile Verde); *Santa María*.

Wet, densely forested ravines, mostly on steep wet banks, the young plants often abundant on steep open roadside banks, 1,800-2,850 meters; Sololá; Huehuetenango; Quezaltenango; San Marcos. Mexico (Chiapas), the type from Volcán de Tacaná; Honduras.

Plants very large, usually growing in large dense colonies from very thick, fleshy rhizomes, essentially acaulescent, but sometimes developing a thick trunk 90 cm. high, this covered with large purple-red ligules; leaves on long stout erect petioles, the blades often 1-1.5 meters broad, cordate-orbicular, shallowly pal-

mate-lobate, the lobes obtuse or acute, irregularly dentate, green, scabrous on both surfaces, especially on the nerves, deeply and broadly cordate at the base; inflorescence dark red or purple-red, as much as 135 cm. high, the main rachis very stout, conspicuously bracteate, hispidulous, bearing very numerous, crowded, slender, densely flowered branches mostly 8–15 cm. long; calyx lobes 1.2 mm. long, filiform-attenuate; petals sparsely hispidulous, soon deciduous; fruits purple-red, ovoid, 2 mm. long.

An occasionally abundant and well-known plant in the forested mountains of western Guatemala, often occurring in great abundance in wet ravines. It is strange that it was not collected and described long ago, since it is common in many places along steep banks beside the roads, and can scarcely have failed to attract the attention of such collectors as Hartweg. One of the finest displays of this ornamental plant is in a white sand ravine at El Pasito, on the road between San Martín Chile Verde and Colomba, where many of the plants are 2 meters high, with massive trunks 10 cm. or more in diameter. The larger petioles are somewhat spiny or prickly. Many of the leaves in this locality were broken down, and had perhaps been browsed by goats. Along the road mentioned there are thousands of plants, mostly small ones, on banks beside the road. It seems likely they may be spread by birds, but at any rate there is some very effective means of dispersing them. It is improbable that in such exposed locations they ever become large flowering plants. The broad leaves often are used as protection against rain, just as *G. insignis* is employed in Costa Rica.

MYRIOPHYLLUM L.

Glabrous aquatic herbs with elongate, simple or branched stems; leaves mostly submersed, alternate, opposite, or verticillate, pinnately parted, the emersed leaves often merely dentate, serrate, or entire; flowers small, perfect or monoecious, mostly solitary in the leaf axils, 4-parted; calyx tube very short, 4-sulcate, the 4 lobes deciduous; petals cucullate, glabrous; stamens 8 or 4, with elongate filaments, the anthers broadly linear; styles 4, short, erect, capitate-stigmatose; ovary 4-celled, 4-ovulate; fruit 4-coccous; seeds pendulous, oblong-cylindric, the testa membranaceous, the embryo cylindric, inserted at the axis of the copious endosperm.

About 35 species, widely dispersed in both hemispheres, most plentiful in temperate regions. Only the following is known from Central America.

Myriophyllum heterophyllum Michx. Fl. Bor. Amer. 191. 1803.

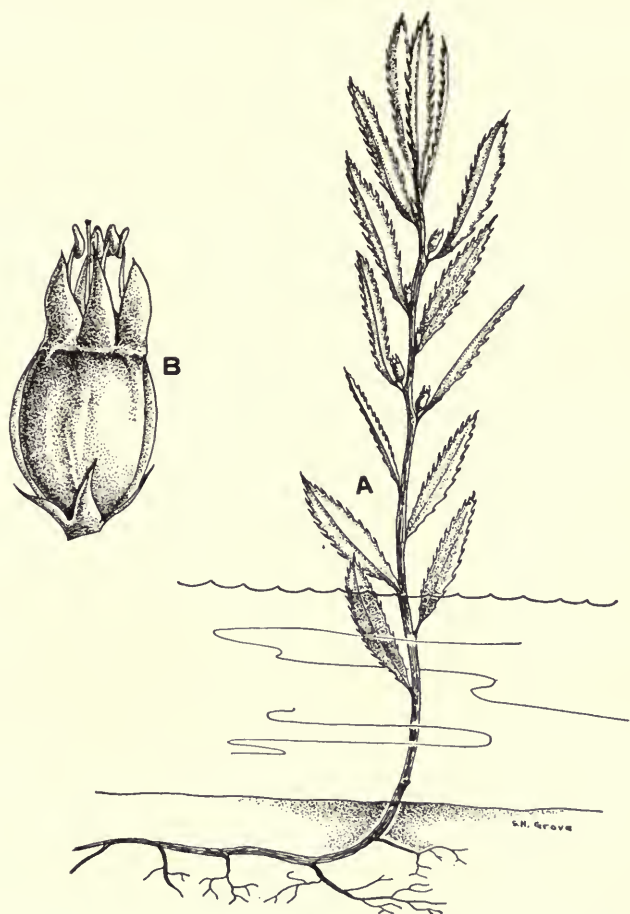


FIG. 94. *Proserpinaca palustris* var. *crebra*. A, Habit; $\times \frac{3}{4}$. B, Flower; $\times \pm 8$.

In rivers, 150–200 meters; Alta Verapaz (Río Sebol, downstream from Carrizal, *Steyermark* 45798). Widely dispersed in North America from Mexico northward.

Plants submerged, forming large beds on mud in shallow water where there is strong current, the stems a meter long or more, densely leafy, sparsely branched; leaves verticillate, pinnately dissected into filiform lobes, 5 cm. long or usually much shorter, the few emersed leaves linear to spatulate or oblong, serrate or entire, 2 cm. long or shorter; flowers solitary and sessile in the axils of bracts, perfect or the lowest by abortion pistillate, the uppermost mostly 5-nate and staminate; calyx tube tetraquetrous, slightly dilated above, 4-sulcate, 0.7 mm. long, the 4 lobes triangular, narrowly acuminate, about equaling the tube; petals navicular, 1.5–3 mm. long, short-unguiculate; stamens 4, the anthers 1–2.3 mm. long; fruit 4-parted, papillose-punctate and tuberculate-rugulose.

The single Guatemalan collection is sterile but probably referable here. At least it is not *M. hippuroides* Nutt. (*M. mexicanum* Wats.), the species apparently most common in Mexico.

There is doubtless in cultivation in Guatemala the Brazilian *M. brasiliense* Camb., in English called "parrot-feather." This is planted frequently in other parts of Central America in the fountains of patios, where it grows luxuriantly, the long stems with their glaucous leaves usually pendent from the bowl of the fountain.

PROSERPINACA L.

Glabrous aquatic herbs, arising from rhizomes, the stems usually simple; leaves alternate, subsessile, lanceolate, dentate or pinnatifid; flowers minute, perfect, mostly solitary in the leaf axils; calyx tube triquetrous, the 3 lobes ovate, short-acuminate; petals 3, with 3 epipetalous stamens, these abortive, 3 stamens inserted on the sepals, these fertile, the filaments very short and thick; anthers broadly ellipsoid; ovary 3-celled, 3-ovulate; styles 3, cylindric or conic-subulate, stigmatose above the middle; fruit nut-like, 3-angulate, 3-celled, 3-seeded; seeds pendulous, the testa membranaceous, the embryo cylindric.

Two species in North America, chiefly in temperate regions. Only one extends to Central America.

Proserpinaca palustris L. Sp. Pl. 88. 1753. *P. palustris* var. *crebra* Fernald & Griscom, Rhodora 37: 177. 1935.

In shallow water of open swamps or in shallow ponds, 1,400–1,500 meters; Alta Verapaz; Baja Verapaz. Widely distributed in eastern and southern United States; Mexico (Chiapas); El Salvador.

Stems mostly simple, slender or rather stout and succulent, suberect or procumbent, partially submerged, the lower part of the stem emitting long branched roots; submerged leaves pinnatifid with linear lobes; emersed leaves sessile or short-petiolate, narrowly lanceolate, averaging about 45 mm. long and 6 mm. broad, acute or attenuate at each end, serrate; flowers sessile in the leaf axils, solitary or ternate; calyx tube 3-winged; sepals 1 mm. long; petals rudimentary; anthers elliptic, basifixed, 0.5 mm. long; styles equaling the sepals; fruit subglobose or pyramidal, trigonous.

The plant is abundant in the shallower parts of swamps and ponds in the general region of Tactic.—Dr. N. C. Fassett had borrowed (1953) most of our material of this genus and that from Central America is all annotated as *P. palustris* var. *crebra*, a variety certainly not abundantly distinct from the typical variety.

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